

# Strengthening Agricultural Extension Training in South Asia (India, Sri Lanka and Nepal)

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*Process Skills and Competency Gaps in Undergraduate  
Agricultural Extension Curriculum*

**(Fulbright Program Research Report)**

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## ACRONYMS

AAU	:	Assam Agricultural University
AC & ABC	:	Agri-Clinics and Agri-Business Centres
ADCs	:	Agrarian Development Centers
AESA	:	Agricultural Extension in South Asia
AICL	:	Agricultural Input Company Limited
AIs	:	Agricultural Instructors
AREP	:	Agriculture Research and Extension Project
ARYA	:	Attracting and Retaining Youth in Agriculture
ASCs	:	Agrarian Service Centres
ATIC	:	Agricultural Technology Information Centre
ATMA	:	Agricultural Technology Management Agency
CAESC	:	Community Agriculture Extension Service Center
CAS	:	Ceylon Agriculture Society
CDP	:	Community Development Programme
CMIASP	:	Community Managed Irrigation/Agriculture Sector Project
CRISP	:	Centre for Research on Innovation and Science Policy
DAC	:	District Agriculture Committee
DAEO	:	District Agricultural Extension Officer
DAO	:	District Agriculture Officer
DLS	:	Department of Livestock Services
DOA	:	Department of Agriculture
DU	:	Delhi University
DWCRA	:	Development of Women and Children in Rural Areas
EASs	:	Extension Advisory Services
EEl	:	Extension Education Institute
FFSs	:	Farmer Field Schools
FGD	:	Focus Group Discussion
FPOs	:	Food Production Officers
FSE&E	:	Farming Systems Research and Extension
FTCs	:	Farmers Training Centers
FTEP	:	Farmers' Training and Education Programme
GSNs	:	Grama Seva Niladaries
HADP	:	Hill Agriculture Development Project

HYVP	:	High Yielding Variety Programme
IAAP	:	Intensive Agriculture Area Programme
IADP	:	Intensive Agricultural District Programme
IAEN	:	Indian Agricultural Extension Network
IAES	:	Integrated Agricultural Extension System
IARI	:	Indian Agricultural Research Institute
ICAR	:	Indian Council of Agricultural Research
ICTs	:	Information and Communication Technologies
IDE	:	International Development Enterprises
IGNOU	:	Indira Gandhi National Open University
IPM	:	Integrated Pest Management
IRDP	:	Integrated Rural Development Programme (India)
IRDP	:	Integrated Rural Development Project (Nepal)
ISEE	:	Indian Society of Extension Education
IVLP	:	Institute Village Linkage Programme
IVRI	:	Indian Veterinary Research Institute
KCC	:	Kisan Call Center
KVK	:	Krishi Vigyan Kendra
KVS	:	Krushikarma Vyapthi Sewaka
MASL	:	Mahaweli Authority of Sri Lanka
MFAL	:	Marginal Farmers and Agricultural Labourers Development Agency
MOAD	:	Ministry of Agriculture Development
MSU	:	Michigan State University
NAEA	:	Nepal Agriculture Extension Association
MANAGE	:	National Institute for Agricultural Extension Management
MOASS	:	Market-Oriented Advisory Services
NAEASL	:	Network of Agricultural Extension and Advisory Services (Sri Lanka)
NAARM	:	National Academy of Agricultural Research Management
NAEP	:	National Agriculture Extension Project
NAIP	:	National Agricultural Innovation Project
NARC	:	Nepal Agriculture Research Council
NARP	:	National Agriculture Research Project
NATP	:	National Agricultural Technology Programme
ND	:	National Demonstration
NDRI	:	National Dairy Research Institute

NDS	:	National Demonstration Scheme
NGO	:	Non Governmental Organisation
NMAET	:	National Mission on Agriculture Extension and Technology
OF	:	Operation Flood
ORP	:	Operational Research Project
PDAP&H	:	Provincial Department of Animal Production and Health
PDOA	:	Provincial Departments of Agriculture
PDOs	:	Product Development Officers
PMAMP	:	Prime Minister Agriculture Modernization Project
PSDG	:	Provincial Specific Development Grant
PTD	:	Participatory Technology Development
PVNRTVU	:	P.V. Narasimha Rao Telangana Veterinary University
RISMFP	:	Raising Incomes of Small and Medium Farmers Project
RKIP	:	Ranijamara Kulariya Irrigation Project
RKVY	:	Rashtriya Krishi Vikas Yojana
RLEGP	:	Rural Landless Employment Guarantee Programme
SAEP	:	Second Agricultural Extension Project
SAARC	:	South Asian Association for Regional Cooperation
SAMETI	:	State Agricultural Management and Extension Training Institute
SAUs	:	State Agricultural Universities
SFDA	:	Small Farmer Development Agency
SVUs	:	State Veterinary Universities
SWOT	:	Strengths, Weaknesses, Opportunities and Threats
T&V	:	Training and Visit system
TADA	:	Technology Assessment and Demonstration for Application
TMO	:	Technology Mission on Oilseeds
TNAU	:	Tamil Nadu Agricultural University
TOT	:	Transfer of Technology
TRYSEM	:	Training of Rural Youth for Self-Employment
USAID	:	United States Agency for International Development
VCI	:	Veterinary Council of India
WSDP	:	Watershed Development Project

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## EXECUTIVE SUMMARY

Assessment of process skills and competency gaps in undergraduate (UG) agricultural extension curricula would help develop competency-based curricular revitalization, which in turn could promote modernization of agricultural extension and advisory services (EASs) in South Asia. The Fulbright-funded research project addressed this issue with the following research questions:

- a. How effective are extension programs in addressing the needs of food and agricultural systems?
- b. What are the critical job skills and core competencies required of extension workers to effectively plan, implement, and evaluate extension work in today's changing context?
- c. Does the current UG curriculum in extension education include education and/or training on these job skills or core competencies?
- d. What are the barriers to effectively training extension workers with required core competencies, and how can these barriers be removed?

The study undertaken in India, Sri Lanka, and Nepal assessed eight process skills and core competencies--program planning, program implementation, communication and public relations, information and communication technologies (ICTs), program evaluation, personal and professional development, diversity and gender, and technical subject matter expertise. These were assessed on "How important are these competencies?" and "How well does the UG extension curriculum address these process skills and competencies?" on a 1 to 5 scale. The perceptions of agricultural extension professionals on appropriate ways to acquire core competencies and major barriers to effective implementation of extension curriculum were also obtained. A total of 628 respondents completed the online survey. In addition, 12 focus group discussions (FGDs) were conducted in India and Sri Lanka, and the participants included 153 research scholars and 95 extension faculty members / field functionaries. The key FGD questions were related to perceptions of local agricultural extension contexts, critical job skills and core competencies required of extension workers, their coverage in the current UG curriculum, and the barriers to effectively training extension workers.

### Key Findings from the Quantitative Data (Online Survey):

- The demographics of agricultural extension professionals in India, Sri Lanka, and Nepal were comparable except for gender representation. In spite of high enrollment of women in agricultural colleges, only 33% and 9% of respondent extension professionals in India and Nepal, respectively, were women, whereas in Sri Lanka, the numbers of men and women extension professionals were about equal.
- The mean scores on the level of importance of all eight process skills and core competencies of agricultural extension professionals in India, Sri Lanka, and Nepal were higher than their corresponding mean scores on level of coverage in UG courses.
- All the methods to acquire process skills and competencies -- preservice training with a revised or updated UG curriculum, internship/industrial training at various work environments during the UG program, basic induction training, in-service training, and opportunities to attend trainings, seminars, workshops, webinars, etc. -- are appropriate and could be employed to enhance the skills and core competencies.
- The major barriers to effective implementation of extension curricula include budget to support practical learning, quality faculty to teach extension courses, student motivation in practical work, teacher motivation to teach required process skills and competencies, classroom and demonstration facilities, and quality textbooks and/or training manuals.

## Key Findings from the Qualitative Data (FGDs):

- Agricultural development professionals hold varied perceptions of agricultural extension. For some, extension is advisory work, an information provider, and a problem solver, whereas it is perceived by some civic leaders as community development work.
- Responses to the question “One thing that extension services are doing particularly well in agriculture” were: advisory services and agripreneurship development; commodity - specific private extension services; e-extension; program planning, implementation, and evaluation; farmers’ field schools; capacity building; demonstrations and on-farm trials; technology commercialization; and third- sector extension.
- Suggestions to improve agricultural extension services were: improve EASs in neglected sectors (e.g., livestock, coarse cereals, and non-plantation crops), update with the latest research information, avoid frequent reorganization of extension services, address gender gap, bring convergence among EASs providers, improve location-specific, need-driven information delivery, recruit more extension workers and provide resources, improve communication and teaching skills, avoid assigning non-extension duties to extension workers, strengthen public sector extension, attract corporate social responsibility funding, and encourage more private and third-sector extension activities.
- The critical job skills or core competencies required of today’s agricultural extension workers as perceived by the respondents were:
  - *Program planning*: Facilitation skills, needs assessment, participatory and priority- setting methods, and stakeholders analysis.
  - *Program implementation*: Coordination, teamwork, stakeholder engagement, negotiation skills, conflict resolution, task delegation, and ability to engage disadvantaged groups.
  - *Communication and interpersonal relations*: Stakeholder communications, cultural compatibility, preparation of success stories and lessons learned, media engagement, listening and public speaking skills.
  - *Program evaluation*: Program appraisal, monitoring and evaluation, development of data collection instruments, data collection, data entry and analysis and interpretation skills, writing and sharing evaluation reports.
  - *Personal and professional development*: Practice principles of good governance, participate in continuing education programs, apply professional ethics in work, and engage diverse stakeholders in extension work.
  - *Technical subject matter expertise*: Essential knowledge in the relevant basic discipline, comprehension of new technology being promoted, disaster management, and agribusiness and entrepreneurship development.
- Respondents perceived that the job skills and core competencies are only theoretically covered with inadequate hands-on training in the UG curriculum.
- Responses to the question “ What are the barriers to effectively training UG students?” were: theoretical coverage in the curriculum with limited practical application, inadequate conveyance and time constraints to go to villages/farms for practical application, inadequate credits assigned to extension courses, inadequate engagement of students in the curricula transaction, very few skilled teachers who can create interest among the students, vacant faculty positions and high student-faculty ratio, low commitment and professionalism by extension faculty members, outdated contents, lack of good textbooks, handling of extension courses by non-extension faculty members, lack of understanding of extension linkages with other subjects, and young minds not being involved in curriculum modification meetings.

- The main suggestions received to overcome the barriers and effectively develop required core competencies were: organizational and budgetary support to extension departments for imparting hands-on learning, involving students in projects and working with farmers in the field, developing strong exposure with villages and farmers, recruiting faculty to achieve and maintain recommended student-faculty ratio, selecting skillful faculty members, and recognizing faculty members for innovations in teaching and curriculum transaction.
- The broad changes in agricultural extension curricula recommended by the FGD participants were: simultaneous curriculum revision at UG level, market-led extension, inclusion of agribusiness management and export farming, transition of traditional field extension methods to digital methods, periodic review of curriculum, e-learning and open and distance learning, addition of more courses and credits, all practical classes with focus on learning-by-doing, virtual classroom exposures with topmost institutes around the world, student exchange programs, assigning research projects and encouraging students to prepare good case studies, involving real-time field extension workers and experienced farmers in conducting some classes to help students understand the practical difficulties in accepting and adopting technologies, covering a variety of successful extension models or best practices, making the curriculum interdisciplinary, values and ethics for extension workers, having students organize one complete extension program as a group activity, and simulation modeling for field practicum.

### Key Recommendations for Policy Decisions:

- To bridge the gender gap, especially in India and Nepal, we recommend supporting more women students to take up the extension specialization at the postgraduate and doctoral levels.
- Recruit more women extension professionals in teaching, research, and field positions, which will help in bridging the gender gap, planning gender-specific extension programs, and delivering extension advisory services (EASs) to meet the needs of women clients.
- The results point to the conclusion that agricultural extension professionals are fully aware of the importance of these job skills or competencies and the fact that the present curriculum minimally addresses these skills and competencies. Therefore, the core issue of concern is that the implementation of the curriculum is weak and does not prepare students with the required skills and competencies for quality extension work. The analysis also informs us that faculty quality needs improvement and that the course content should specify the skills or competencies to be achieved, suggests pedagogy for facilitating process skills development, and supports practical training and fieldwork. Therefore, we recommend that the agricultural universities in South Asia focus on enhancing the curriculum transaction process, which needs the attention of the ICAR Dean's Committee of India and the Agricultural Extension Subject Matter Committees of Sri Lanka and Nepal.
- Curriculum analysis also revealed that gender concepts are completely missing from the UG agricultural extension curriculum of India, although they are well included in the veterinary and fisheries UG extension curriculum of India and the UG agricultural extension curricula of Sri Lanka and Nepal. The resulting recommendation is that the next Dean's Committee of ICAR considers inclusion and transaction of gender sensitivity concepts, gender analysis, and gender budgeting in India's UG agricultural extension curriculum.
- The findings of FGDs and analysis of existing UG extension curricula point to the conclusion that India, Sri Lanka, and Nepal are still continuing to teach the traditional broad course contents adopted in the 1960s from U.S. and U.K. universities. Though some of those contents are still relevant in the field of agricultural extension, curriculum reforms are important to address new challenges such as EASs during COVID-19 or similar pandemics, climate change, demand-driven or market-led extension, integration and value chains, agriculture start-ups and digital extension, management of natural resources, community sustainability, facilitation for development, diversity of extension staff

members and clients, changing job markets for agriculture graduates, etc. In view of all these findings, we recommend transforming the terminology and course contents of UG extension curricula with a focus on modernizing EASs.

- The results on major barriers to effective implementation of extension curricula in India, Sri Lanka, and Nepal revealed major similarities in budgetary constraints, infrastructure, quality of extension faculty members and textbooks, etc. To address these barriers and improve agricultural extension training in South Asia, we recommend that colleges and universities provide budgetary support for extension practical teaching-learning experiences, recruit quality faculty members to teach extension courses, motivate teachers to teach required process skills and competencies, provide good classroom and demonstration facilities, and make available quality textbooks and/or manuals.
- Agricultural extension professionals are expected to acquire basic core skills and competencies through preservice training. It is recommended that colleges and universities define the minimum day-one competencies expected of graduates while reformulating and/or revising their curricula so that they can be assessed during the preservice training. These competencies can be contextualized through basic induction training and further refined through staff development or in-service training and continuing education opportunities.
- Around 55,000 agricultural students graduate with four-year degrees every year in India, Sri Lanka, and Nepal. These graduates with varying competencies populate agricultural teaching, research, and extension organizations. The results of the FGDs point to the conclusion that agricultural colleges and universities are facing a quality dilemma. Extension or outreach faculty members should be required to promote scholarship of extension by maintaining close working relationships with farmers, agribusiness operators, and field extension professionals to offer hands-on training to UG students. To promote the scholarship of extension, colleges and universities are recommended to adopt a separate track for extension/outreach faculty similar to the teaching track.
- On the basis of the study findings and after a careful review of existing UG extension curricula in India, Sri Lanka, and Nepal, three UG courses of three credits each to be offered during the first three years of the curriculum are proposed. The contents to be covered under these three courses are further developed into 13 blocks, 117 theory units, and 71 application/practical units along with relevant references. We recommend to the ICAR Dean's Committee of India and the Agricultural Extension Subject Matter Committees of Sri Lanka and Nepal to consider and adopt these three courses.
  1. Foundations of Agricultural Extension (2+1 credits).
  2. Managing Agricultural Extension Programs (2+1 credits).
  3. Agribusiness and Supply Chain Management (2+1 credits).

# CHAPTER 1 - INTRODUCTION

The agricultural sector remains a chief economic component in South Asia. The region has been characterized by small-scale agriculture, which employs over 60% of the labor force. Agricultural development is the major means to alleviate poverty and curtail food insecurity. Small-scale agriculture, however, has been facing complex challenges such as the spread of commercial farming, trade liberalization, feminization in agricultural labor, and technological advancement, which have created both opportunities and threats for smallholder livelihoods (Rivera and Alex, 2008; Suvedi and Ghimire, 2015; Suvedi and Kaplowitz, 2016). As per the projections, the developing countries need to double their present production by 2050 to meet the demand. It is a challenge for all the national governments to achieve this target under unfavourable conditions such as decreasing water levels, increasing soil degradation, and rising global temperatures. Agricultural extension and advisory services (EASs) play a key role in addressing this challenge.

## 1.1 AGRICULTURAL EXTENSION IN INDIA

Agricultural extension played a key role in India's Green Revolution in the 1960s (Gulati et al., 2018). Before being formalized, EASs evolved with changing needs of the time -- from being public to pluralistic, from top-down to bottom-up, and from transfer of technology to broad-based and demand-driven (Rohit et al., 2017). The history of agricultural extension in India can be broadly categorized under the following heads:

### 1.1.1 PRE-INDEPENDENCE PERIOD

Extension work in India started in 1871 with the establishment of the Department of Agriculture at the central level. By 1882, all the Indian states had state departments of agriculture. However, there was no extension infrastructure to impart farm-related knowledge to the farmers. The agriculture departments had no role in increasing food production -- they were mainly concerned with compiling statistics, mainly to collect revenue (Singh et al., 2014). During this time, many small-scale rural/ agriculture development efforts were made by individuals / agencies with little or no help from the government (Box 1.1).

#### **Box 1.1 : Important Extension Initiatives During Pre-Independence Period**

- 1903 - Scheme of Rural Reconstruction
- 1920 - Sevagram Project
- 1921 - Rural Reconstruction Institute / Shriniketan Initiative
- 1921 - Marthandam Programme
- 1927 - Gurgaon Experiment
- 1932 - Baroda Village Reconstruction Project
- 1942 - Grow More Food Campaign
- 1945 - Indian Village Service
- 1946 - Firka Development Scheme

### 1.1.2 POST-INDEPENDENCE PERIOD

During this period, the focus was on increasing food production and community and rural development. Agricultural extension was characterized by a top-down approach and lack of people's participation-- farmers were at the receiving end with no say in decision making. It was a one-way process, a kind of "sock it to them" approach. Farm technologies generated by publicly funded research organizations were mostly disseminated by agricultural extension workers through demonstrations, field visits, farmers' meetings, media use, etc. (Singh et al., 2014). This process had conceptual backup from the "diffusion of innovation" model (Rogers, 1962). The World Bank- funded Training and Visit (T&V) system was the predominant extension model in this era with a technology transfer approach. Although impressive results were documented by the studies that

evaluated the T&V system, the issues related to sustainability of funding, the high staffing requirement, and the quality of staff became the key concerns (Gershon Feder et al., 1987). Another pioneer development during this era was the genesis of *Krishi Vigyan Kendras* (KVKs). The KVKs have grown as the single largest network of frontline extension in the country, with a quantum jump in their number to 716 as of 2020. The main mandate of KVK is technology assessment and demonstration for application (TADA) and capacity development. As extension practitioners realized the importance of involving the clientele in their work, participatory technology development (PTD) gained recognition in the 1980s. Notable extension and rural development programs during this period are listed in Box 1.2.

**Box 1.2 : Important Extension Initiatives During Post-Independence Period**

- 1948 - Etawah Project
- 1948 - Nilokheri Project
- 1952 - Community Development Programme
- 1952 - Key Village Scheme
- 1953 - National Extension Service
- 1959 - Panchayati Raj
- 1960 - Intensive Agricultural District Programme (IADP)
- 1964 - Intensive Agriculture Area Programme (IAAP)
- 1964 - National Demonstration Scheme
- 1966 - High Yielding Variety Programme (HYVP)
- 1966 - Farmers' Training and Education Programme
- 1969 - Small Farmers Development Agency (SFDA)
- 1969 - Marginal Farmers and Agricultural Labourers Development Agency (MFAL)
- 1970 - Operation Flood
- 1974 - Training and Visit System (T&V System)
- 1974 - Krishi Vigyan Kendra
- 1975 - Operational research project
- 1979 - Lab to Land Programme
- 1978 - Integrated Rural Development Programme (IRDP)
- 1979 - Training of Rural Youth for Self-Employment (TRYSEM)
- 1979 - Development of Women and Children in Rural Areas(DWCRA)
- 1983 - Rural Landless Employment Guarantee Programme (RLEGP)
- 1983 - National Agriculture Extension Project (NAEP)
- 1986 - Technology Mission on Oilseeds (TMO)
- 1987 - Watershed Development Project (WSDP)
- 1988 - National Agriculture Research Project (NARP)

**1.1.3 POST-GLOBALIZATION PERIOD (1990 - 2000)**

With the globalization of agriculture during 1990s, the approach of production-led and market-led extension became indispensable. Agricultural extension witnessed a qualitative change in the 1990s, with a focus on privatization and gradual withdrawal of support to the state-led extension system. Reduced spending by government weakened the public sector extension system, and other, non-governmental agencies stepped in to fill the vacuum (Sajesh and Suresh, 2016). Private and market-led extension services are the new dimensions of agricultural extension to suit various farming situations (Reddy and Chandrashekhara, 2002). The approach was a perfect combination of agriculture, economics, and extension equipped enough to reach the doorsteps of farmers with the help of appropriate technology packages (Kaleel et al., 2007). As part of public sector extension reforms and to increase its relevance, accessibility, and efficiency, the Agricultural Technology Management Agency (ATMA) was introduced

with a focus on decentralization, a bottom-up approach, and convergence. The other initiatives during this period include the Institute Village Linkage Programme (IVLP, 1995), the National Agricultural Technology Programme (NATP, 1998), and Agricultural Technology Information Centers (ATIC, 1999).

The KVKs under the ICAR system and ATMAs under the Ministry of Agriculture are the frontline institutions providing extension services to Indian farmers. Several reports, however, indicated inadequate linkages between KVKs and ATMAs at the district level in the delivery of EASs.

#### 1.1.4 POST-2000 PERIOD

Since 2000, organizational issues such as inadequate extension staffing, limited partnerships, and a continued top-down linear focus to extension hindered the functioning of the public extension system and led to the emergence of many new players in provision of EASs (Babu et al., 2013). Over the past two decades, the pluralistic provision of services further expanded, and new institutional arrangements in agricultural extension have emerged, such as contract farming, private extension agencies, input agencies, farmers' organizations, producer cooperatives, financial agencies involved in rural credit delivery, and consultancy services (Sulaiman, 2012). The ICTs, particularly mobile phones, have revolutionized the dissemination of information to farmers. Notable extension programs during this period are listed in Box 1.3.

##### Box 1.3: Important Extension Initiatives Since 2000

- 2000 - Pluralistic Extension
- 2000 - Private Extension
- 2000 - ICTs and e-Extension
- 2001 - Public-Private Partnerships
- 2002 - Agri-Clinics and Agri-Business Centers (AC & ABC)
- 2004 - *Kisan* Call Center
- 2005 - Support to State Extension Programs
- 2006 - National Agricultural Innovation Project (NAIP)
- 2014/15 - National Mission on Agriculture Extension and Technology (NMAET)
- 2015 - Farmers FIRST
- 2015 - Attracting and Retaining Youth in Agriculture (ARYA)
- 2016 - National Agriculture Market (e-NAM)

During the pre-independence period, the focus of the colonial department of agriculture was on cash crops such as cotton, sugarcane, tea, coffee, etc., to meet requirements back home. Some small-scale, pre-independence extension initiatives aimed at solving rural problems such as development of rural communication, reduction of illiteracy, improvement of water supply, formation of *panchayats* and cooperatives, improved sanitation, irrigation, livestock improvement, and development of *Khadi* and cottage industries.

Apart from community and rural development, the focus of the post-independence extension programs was on increasing agricultural production by distributing high-yielding varieties, encouraging adoption of packages of practices, regular training, and close research-extension linkages. The transfer of technology during this period was through large-scale national demonstrations, operational research projects, the establishment of KVKs, and Lab-to-Land programs. These production-led agricultural extension initiatives followed largely the conventional group / mass contact methods and focused mainly on cereals, pulses, oil seeds, fruits, and vegetables. Livestock extension was largely neglected and covered under the broad umbrella of crop extension.

The structural, financial, and managerial reforms to improve agricultural extension during the post-globalization period include decentralization, a demand-driven approach, pluralism, cost sharing, cost recovery, and increased

location-specific, single-window service delivery with active participation of stakeholders in the extension services delivery process.

Besides increasing agricultural production, agricultural extension since 2000 has focused on pluralism, decentralization, and privatization, public-private partnerships, contract farming and value chains, promotion of agribusiness, attracting and retaining youth in agriculture, climate- smart agriculture, ICTs, *Kisan* Call Centers, e-extension and e-marketing, etc.

Recognizing the importance of the changing needs, India's agricultural extension has come a long way from being public to pluralistic, from top-down to bottom-up, and from transfer of technology to broad-based and demand-driven services. From the above review, it is clear that each decade saw different extension approaches, of which some succeeded and some failed. Learning from them has helped extension approaches to evolve in India.

## 1.2 AGRICULTURAL EXTENSION IN SRI LANKA

Sri Lanka has a long history of crop production. The evidences of well-developed irrigation systems show that Sri Lanka had an advanced rice production system before colonization (Wadduwage, 2006). Some forms of extension services began after the arrival of Europeans in Sri Lanka. Extension programs were initiated to expand the cinnamon crop during the Dutch period in the 17th century (Marambe et al., 2017). The British introduced the plantation industry -- i.e., tea, coconut, cashews, and rubber -- at the expense of the peasantry and the native agricultural systems (Shanmugaratnam, 1981). Plantations were managed under superintendents of plantations, and a hierarchy of field officers, field assistants, supervisors (*Kankanam*), and laborers were used for management. Botanical gardens were established for experimentation and demonstration (Garforth et al., 1997).

### 1.2.1 PRE-INDEPENDENCE PERIOD

The Ceylon Agriculture Society (CAS) was established in 1904 in an effort to revive farming (Wijeratne, 1988). The CAS promoted experimental work and operated an agricultural extension service with the objective of researching native cultivators and passing on the agricultural knowledge and experience gained by the research staff (Arasasingham, 1981).

The Department of Agriculture (DOA) was established in 1912 to disseminate knowledge about mycology, entomology, chemistry, and landscaping to promote plantation crops. The DOA appointed professional agriculturists as directors of agriculture. In 1921, the employees of the Ceylon Agriculture Society were incorporated into the DOA (Wijeratne, 1988). In 1938, six agricultural divisions were established, and each division was led by an agricultural officer who maintained direct contact with the farmers (Wijeratne, 1988).

### 1.2.2 POST-INDEPENDENCE PERIOD

The government opened agriculture farms for research, seed production, and demonstration of improved agricultural practices. Agricultural instructors (AIs) were hired to function as the field extension workers. Food production was regarded as a high priority in 1952. A new department called the Department of Food Production (DFP) was created under the Ministry of Agriculture (Wickremasinghe, 2006), and it was responsible for coordinating the operations of all food production departments, including the DOA.

Two significant changes in the extension structure took place in 1957:

- First, the District Agriculture Officer (DAO) was replaced by the district agricultural extension officer (DAEO), and under the oversight of one DAEO, each administrative district was created. For the first time, village-level extension officers carried the title "Krushikarma Vyapathi Sewaka (KVSs)" (Wijeratne, 1988).
- Second, the DFP was disbanded, and all food production officers (FPOs) with a year-long training in practical farm schools were incorporated into the DOA (Wickremasinghe, 2006). Later the FPOs were

renamed as KVSs. The KVSs were placed under the agriculture instructors (AIs) and served as frontline extension officers at the village level (Wickremasinghe, 2006).

When extension operations became complex and the extension staff grew, a separate division under the DOA was created, and the first deputy director of agriculture (extension) was appointed in 1963.

A revitalization of agricultural extension took place in the 1970s. Agrarian Development Centers (ADCs) were established to provide coordinated and timely services such as agricultural credit, agriculture inputs, and extension services under one roof. Export crops were separated from the Department of Agriculture, and the Department of Minor Export Crops was created to strengthen extension activities related to spices. The Centers for Agriculture Services and Productivity Committees were set up. A coordinated agricultural services delivery under one roof was initiated, with the Agriculture Extension Center, the bank, fertilizer stores, and the Agrarian Service Division offices were housed together for coordinated and timely service delivery.

In 1979, the Mahaweli Authority of Sri Lanka (MASL) brought all agricultural development activities, including extension, within the Mahaweli Development Area under its jurisdiction. The result was a coordinated network of crops and livestock development programs in the Mahaweli area (Marambe et al., 2017).

Despite various efforts, extension services remained weak because of lack of national planning and coordination, insufficient numbers of extension workers to maintain direct contact with farmers, lack of coordination between research and extension, poor technical knowledge and skills of extension staff members, and multipurpose duties assigned to extension workers (Abeywardana, 1984). To address coordinating extension, research, and training institutions, upgrading the knowledge and skills of frontline workers, and maintaining regular contacts with farmers, Sri Lanka adopted the Training and Visit system of agricultural extension in 1979. The T&V system was first adopted in one of the dry zone districts -- Anuradhapura -- in 1975, and it eventually expanded to selected areas in other districts (Blanckenburg et al., 1980). New positions of subject matter specialists were established in training institutes of the DOA. These subject matter specialists were made responsible for coordinating activities between extension officers and research officers. Provincial technical working groups were established to provide linkages between agricultural research and agricultural extension services. The KVSs (agricultural extension workers) rendered extension services at the grass-roots level. This led to a significant increase in agriculture extension staff members, improved relations between researchers, extension training of extension staff, an increase in staff training centers, and increases at all levels of extension staff.

In 1987, Sri Lanka's 13th Constitutional Amendment and Act of Provincial Council shifted the organization of agricultural extension from the national to the provincial level (Wickremasinghe, 2006). The KVSs were placed under divisional secretaries with non-agricultural extension duties and responsibilities, linkages between agricultural research and agricultural extension were interrupted, and the decentralized extension system collapsed. Apart from the central ministries, provincial ministries were set up to work separately for farmers. The provincial departments of agriculture (PDOA) and the Provincial Department of Animal Production and Health (AP&H) were formed under the Provincial Ministries of Agriculture. Agricultural extension services were organized under the provincial director of extension, and an interprovincial extension system operated centrally through the Extension and Communication Division of the DOA.

In 1989, after the promulgation of the Council Act, the Provincial Department of Agriculture restructured its workforce. Its field-level extension workers were designated as *Grama Seva Niladaries* (GSNs) to focus on administrative functions. The inadequacy of PDOA field workers and low cost efficiency of the T&V system contributed to a widening of the gap between extension staff members and farmers (Marambe et al., 2017).

The Second Agricultural Extension Project (SAEP) was initiated in 1994 with funds from the World Bank to improve the country's non-plantation extension program. The SAEP's policy was to recognize and address farmers' challenges in a participatory relationship with farmers' groups. The extension program implemented

under the SAEP was called the Integrated Agricultural Extension System and had four implementation agencies: the Department of Export Agriculture, the Department of Animal Production and Health, the Coconut Cultivation Board, and the Department of Agriculture.

### 1.2.3 CONTEMPORARY EXTENSION SERVICES

The World Bank-funded SAEP was terminated in 1998, and there has been no unified extension system nationwide since then. Various forms of agricultural extension and advisory services have been implemented in Sri Lanka. With funding from the UN Food and Agriculture Organization and a number of other donors, the Sri Lankan Department of Agriculture established farmers field schools (FFSs), also known as “community-based learning programs,” during 1995-2002. The FFSs operated an integrated pest management (IPM) program across Sri Lanka.

In 2000, the Department of Animal Production and Health was created to support the development of the livestock and poultry sector.

Agricultural extension was again reorganized and decentralized at the district level in 2012, and 25 district directors (DDs) were appointed, placed under a district secretary, and supervised by the Ministry of Agriculture under the central government. The DDs provided coordination of agriculture development programs of the government, NGOs, and farmer associations. Technical assistants replaced KVSs, and they carry out their duties under the direct supervision of agriculture instructors.

Product development officers (PDOs) under the DOA also serve as extension officers. They look at the technological requirements of farmers and raise awareness regarding plant protection measures. The PDOs are required to perform multiple duties -- they are expected to increase the number of "mega farmers" and "GroMore" farmers and make them aware of new products through training events, pocket meetings, seminars, and field days (Widisingheet et al., 2015).

In summary, Sri Lanka has tried various extension approaches to serve farmers. There is no single extension system in provincial agriculture departments. The Finance Commission of the central government allocates and provides funds for agriculture development projects in the form of Provincial Specific Development Grants (PSDGs). The Provincial Department of Agriculture develops and implements projects, and agriculture instructors implement project activities. A District Agriculture Committee (DAC) headed by the district secretary and with technical backup from the district director of agriculture meets monthly to discuss important agricultural problems and issues. The DAC includes representatives of various agriculture stakeholders.

Today, Sri Lanka has pluralistic extension service providers representing both the public and the private sectors. For example, the Department of Agriculture is engaged with extension services for many crops, such as rice, pulses, grains, oilseed crops, yams, fruits, and vegetables. The Department of Animal Production and Health supports the livestock and poultry sector. The Department of Export Agriculture looks after spices and beverage crops, and the Department of Royal Botanical Gardens does the same for floriculture. Semi-government organizations such as the Tea Smallholdings Development Authority, the Rubber Research Institute, the Cashew Development Board, and the Coconut Cultivation Board promote their respective plantation crops. Other commodities are promoted by the Department of Export Agriculture.

The private sector is also actively engaged in food production and distribution. For instance, the poultry sector is operated through a buy-back system. Private firms provide the farmers with day-old chicks, and the contracted organizations buy back the birds at the age of 2 to 3 months. These private organizations provide all technical information necessary to raise the chicks, including information related to feed, medicine, and other utilities. Similarly, some private companies are engaged in purchasing vegetables from the farmers and supply to the supermarkets through a contract growing system while providing material inputs and technical know-how for the farmers (Marambe et al., 2017).

The use of ICTs in extension is increasing, and farmers are willing to pay for these services. According to Marambe et al. (2017), the DOA has taken initial steps to expand the e-extension system nationwide. All Agrarian Service Centres (ASCs) are being equipped with a computer linked to a database through the Internet. Using the Internet, farmers could contact a technical officer at the ASCs to further upgrade his/her knowledge on particular subject matter.

It has been noted that the function of agricultural extension in a commercialized agricultural system is different from that in the subsistence farming system operation (Mahaliyanaarachchi and Bandara, 2006). As commercialization of agriculture advances -- such as contract broiler farming, commercial vegetable production, and direct marketing -- and use of ICTs increases, many extension services will move toward a pay-for-service system.

Human resources within extension are the most critical element to transform the agricultural sector. Training of extension workers is the key to a successful human resources development program. Extension workers need high quality training in both technical subject matter and extension worker process skills and competencies such as communication and program development and evaluation. The higher education institutions play a critical role in developing a robust curriculum for extension worker training, the focus of this study.

### 1.3 AGRICULTURAL EXTENSION IN NEPAL

Initiatives for agricultural development in Nepal date back to the 1920s. The Department of Agriculture (DOA) came into existence in 1924. However, agricultural development activities at that time were limited to a few demonstration farms and a fruit nursery in Kathmandu Valley. The formal agricultural extension service began in 1952-54 with the introduction of a community development program funded by the U.S. Agency for International Development (Suvedi and Pyakuryal, 2001). The objective of the agricultural extension program was to disseminate modern know-how to farmers.

The DOA was primarily responsible for the planning and delivery of agricultural extension services. The DOA coordinated both research and extension services until an autonomous research institution, the Nepal Agricultural Research Council, was established in 1991 (NARC, 2010). The chronology of agricultural institutional development reveals that many forms of institutional arrangements were adopted for the delivery of agriculture extension services in Nepal (Box 1.4).

#### **Box 1.4: Timeline of Agricultural Institutions Development in Nepal**

- 1921 - Office of Agriculture was established within Singh Durbar, Kathmandu
- 1924 - Department of Agriculture (DOA) was established
- 1924 - Trial demonstration farm within the compound of Singh Durbar, Kathmandu
- 1924 - Fruit Nurseries and Agriculture Farms in Janakpur, Parwanipur, and Pokhara
- 1952 - Tribhuvan village development program
- 1952 - DOA received additional funding support under U.S. Point Four Program
- 1953 - Department of Cooperatives
- 1955 - Research stations were established
- 1957 - School of Agriculture (now Institute of Agriculture and Animal Science)
- 1961 - Department of Food Technology and Quality Control (DFTQC)
- 1965 - Agricultural Input Corporation (AIC) under Ministry of Agriculture
- 1966 - DOA splits into five departments: Agricultural Extension was one of them
- 1968 - Agricultural Development Bank (ADB)
- 1968 - Lumle Agricultural Research and Training Center funded by the British
- 1972 - Five agricultural departments merged to form single DOA

- 1975 - Agricultural Project Service Centre for planning and evaluation
- 1975 - Pakhrib as Agricultural Research and Training Center funded by the British
- 1977 - Small Farmers' Development Program under Agriculture Development Bank
- 1979 - DOA splits: DOA and Department of Livestock Development and Animal Health
- 1985 - National Agricultural Research and Services Centre (NARSC)
- 1989 - Lumle and Pakhrib as Agriculture Research Centers handed over to NARSC
- 1990 - Department of Horticulture
- 1991 - All agricultural departments merged again into DOA
- 1991 - Nepal Agricultural Research Council (NARC), an autonomous research institution
- 1995 - Department of Livestock Services (DLS) split from DOA
- 1995 - Agriculture Perspective Plan (APP 1995-2015) implemented
- 2000 - Agricultural Project Service Center (APROSC) liquidated
- 2001 - Nepal Agricultural Research and Development Fund (NARDF)
- 2015 - Agriculture Development Strategy (ADS 2015-2035) implemented

### 1.3.1 AGRICULTURAL EXTENSION APPROACHES IN NEPAL

During the past 70 years, a variety of extension approaches have been practiced in Nepal, with varying degrees of success. These extension approaches included:

**Conventional Technology Transfer Approach:** Conventional top-down and supply-driven technology transfer approach was dominant during the early years of agricultural extension in Nepal. Extension programs were planned at the DOA level, and the District Agriculture Office implemented the programs and activities. This approach was based on the trickle-down strategy of diffusion theory, and it was prevalent during the 1950s and 1960s.

**Farmers Training Centers:** Agricultural farms in various agro-climatic zones and donor-funded agricultural development projects set up training facilities to provide training for frontline extension workers and lead farmers. The major training activities included: Gandaki Agriculture Development Project (funded by Germany), Janakpur Agriculture Development Project (funded by Japan), and Hill Agriculture Development Project (HADP) (funded by the Swiss government). They provided training at research farms showcasing the benefits of improved farming practices.

Of these farmer training programs, the *Tuki* approach followed by HADP is worth explaining. "*Tuki*" means a kerosene lamp in the Nepali language. A *Tuki* was an enlightened, progressive farmer, a leader in his/her community, who received training and was supplied with improved inputs to apply on his or her farmland so that others would be motivated to do the same. Inputs were highly subsidized for a *Tuki*. This approach was limited to two hill districts (Sindhupalchok and Dolakha) under a Swiss government-assisted rural development program.

**Lumle and Pakhribas Agricultural Research Centers:** These centers were established in 1968 and 1975, respectively, using the British Gurkha Welfare Fund, with the aim of training retired British army personnel in hilly regions of Nepal. They focused on demonstrations and applied research and played key roles in agricultural research, training, and extension in the country. In 1989, these centers were handed over to the Nepal Agriculture Research Council.

**Training and Visit (T&V):** The T&V system was adopted during the mid-1970s-1980s in the World Bank-funded project districts covering Terai and a few hill districts. The T&V approach followed a routine and disciplined program to focus on regular training by subject matter specialists to agricultural assistants and junior technicians/junior technical assistants and, through them, to the farmers. The T&V approach was abandoned after the World Bank concluded its funding for agricultural extension.

**Integrated Rural Development Project (IRDP):** During the 1970s and 1980s, several IRDPs in Nepal followed training and demonstrations of improved farming practices. These projects assumed that existing use of technology of production was inadequate, and the major limiting factor was institutional -- specifically, coordination. Thus, extension activities were funded and coordinated through IRDP project staff members.

**Block Production Program:** This approach was initiated at several cropping systems research sites to provide necessary technical support services to farmers in a coordinated way to facilitate the adoption of technologies generated through cropping systems research during 1980s.

**Farming Systems Research and Extension:** Farmers of Nepal practice a mixed crop-livestock farming system, and researchers recognized the need to address the entire farming system rather than a particular field crop or breed of livestock. This thinking evolved during the 1980s out of the USAID-funded Integrated Cereals Projects implemented during the 1970s. This was a bottom-up approach that involved farmers in all the steps of technology generation and adoption.

**Groups Approach:** Reaching farmers individually is important but not a cost-efficient approach. Reaching and teaching farmers in a group setting has emerged as a dominant approach of extension since 1990. It builds on the notion that most farmers are economically and socially weak as individuals and so cannot bargain for limited resources, but when they form a group, they become powerful. Moreover, it also becomes easier and more cost-efficient for extension workers to reach more farmers through these groups.

**Pocket Package Approach:** This strategy was recommended in the operational plan of the Agriculture Perspective Plan of 1995. This approach assumes that there are complementarities among the majority of production factors. Therefore, agricultural production efforts should be concentrated in a geographically defined pocket or geographical area where critical services needed to boost production are made available to farmers. For example, the Linking Farmers with Markets for Rural Prosperity project of International Development Enterprises (IDE), Nepal, facilitated the smallholder farmers to rapidly increase their incomes by strengthening the existing horticulture value chain (Blum et al., 2020; IDE Nepal, 2011; Reddy et al., 2011).

### 1.3.2 EXTENSION SYSTEM IN THE NEW MILLENNIUM

The Department of Agriculture and the Department of Livestock Services, the two departments under the Ministry of Agriculture Development, are mandated to deliver extension services in the country and to mobilize their networks (districts-based offices, service centers, and research farms). Both the departments follow the pocket package approach envisaged in the Agriculture Perspective Plan. Within the pockets, farmers are first organized into commodity groups. They get training and, in principle, are expected to take group action through farmers' groups, cooperatives, and community-based organizations. Over 22,000 farmers' groups were being mobilized through DOA and DLS in 2011 (Suvedi and McNamara, 2012). Similarly, the Department of Livestock Services (2010) reported that there were 1,564 dairy cooperatives, mostly located in dairy pockets. These groups and cooperatives are valuable assets of the agricultural sector, many of which may be utilized to enhance agricultural extension services.

Agricultural extension in Nepal could not be effective in the past mainly because of weak linkages between research and extension. Adoption of improved farming practices recommended by research innovations has been low. There have been separate chains of command for education, extension, and research, which seemed to be competing with rather than complementing each other. Most of the extension methods and messages were imposed from the top down, and farmers had little opportunity for input or experience sharing. Many of these approaches were guided by the donors rather than structured to meet local farmers' needs and expectations.

Upon recognition of the above weaknesses, the government of Nepal, with funding from the World Bank, initiated a new Agriculture Research and Extension Project (AREP). The project followed the concept of "projectization" in agriculture services -- extending coordinated, research-based technology transfer to farmers

to increase food production and income. It was expanded in 75 districts after piloting in 23 AREP districts. Under this approach, technicians were expected to stay in the field and be proactive to solve field problems. This project had mixed results (Thapa and Ojha, 2004). The majority of the programs have been aborted without letting them move through the complete cycle. Lack of commitment by collaborating and facilitating organizations, poor understanding of the concept by extension agents, and inability to scaling up or replicate successful practices to other areas were some of the barriers to success. Most important, the 10-yearlong political conflict or civilwar negatively impacted rural and agricultural development work in remote villages.

### 1.3.3 AGRICULTURAL EXTENSION UNDER NEW FEDERALISM

Until 2015, the function of agricultural extension was carried out by two major sister departments under the Ministry of Agriculture Development (MOAD): the Department of Agriculture (DOA) and the Department of Livestock Services (DLS), which were separated from a single department, DOA, in 1995. The Agricultural Input Company Limited (AICL) and the Nepal Agriculture Research Council under the MOAD played a crucial role in inputs (seed, fertilizer) supply and research-based innovations. The DOA and DLS served farmers through Agriculture Service Centres.

Nepal adopted federalism under the new constitution promulgated in 2015. Under the new constitution, Nepal has three tiers of governments: federal, provincial, and local. Agricultural development and extension-related responsibilities, as per the constitutional provisions, fall under all three levels of governments.

The local government is responsible for the management, operation, and control of extension services. In each local entity (rural and urban municipalities), there are altogether four agricultural positions (graduate, JTs, and JTAs) and five to eight livestock positions. The local governments implement a subsidy-based agriculture extension program from the local and federal government budgets and programs. The provincial governments, on the other hand, provide agriculture extension services through 51 Agriculture Knowledge Centers and 47 Veterinary Hospitals and Livestock Service Expert Centers. The provincial governments implement agriculture extension services through the proposal-based subsidy programs. The federal government provides extension services through its Development Centers and Laboratories, Agriculture Farms and four nationally managed projects: Prime Minister Agriculture Modernization Project (PMAMP), Raising Incomes of Small and Medium Farmers Project (RISMFP), Community Managed Irrigation/Agriculture Sector Project (CMIASP), and Ranijamara Kulariya Irrigation Project (RKIP).

Also in 2015, Nepal adopted a long-term Agriculture Development Strategy (2015-2035). The ADS has articulated the need for creating a Community Agriculture Extension Service Center (CAESC) in each unit of local government body that will be fully owned and managed by the communities and funded by a combination of resources obtained from the local government, cooperatives, the private sector, and the provincial government. The CAESC will own and manage its own assets, hire its own staff, conduct meetings, formulate business plans, operate a bank account, disburse funds, audit accounts, and conduct a periodic review of performance (Jaisi et al.,2018).

The structure of extension service delivery is evolving. Several issues related to budget, personnel, and program management have emerged. For example, according to the new constitution, the provincial government is expected to hire public servants for the provincial and local levels. Federally hired staff members with training and experience are not willing to taking on jobs at the local level. Although provincial government has established multidistrict-level *Krishi Vigyan Kendra* (KVKs) and municipality-based extension units, the operation and management of extension services have stayed the same. KVKs are funding agricultural development projects following the same old procedures. The extension staff has limited knowledge and experience in planning demand-driven, locally appropriate agricultural development programs. Only limited programs and activities reach rural women and disadvantaged groups. The challenge to transform the agricultural sector is enormous. Extension workers need cutting-edge knowledge and skills in technical subject matter. More important, they need process skills related to pluralistic and participatory programming, leadership and facilitation skills, and

communication, group dynamics, and diversity management skills. What process skills and competencies are perceived as important for extension workers by agricultural development professionals? Are agricultural training institutions, such as colleges and universities, offering courses to enhance the important process skills and competencies? Is there a gap between the levels of importance of these training needs and how adequately the current extension curriculum address these needs? This study is designed to assess gaps in training needs of extension workers in the contemporary pluralistic, participatory, and demand-driven agricultural extension programming context.

## 1.4 STUDY BACKGROUND

Extension advisory services (EASs) are crucial to overall agricultural development in South Asia. The EASs provide research-based educational and informational programs, typically for rural populations. Historically, agricultural extension assisted farm people through educational procedures aimed at improving farming methods and techniques, increasing production efficiency and income, and bettering standards of living. Today, extension serves both rural and urban populations with a wide range of programs aimed at helping to improve beneficiaries' quality of life. Key elements embraced by contemporary EASs include:

- Public-private partnership in the delivery of advisory services.
- Decentralization of program planning and implementation.
- Services delivery at the local level.
- Focus on women, youth, and disadvantaged groups.
- Strong clients' participation in program planning, implementation, and evaluation.

The traditional agricultural extension approach -- top-down, supply- and technology-driven -- no longer appears to be an appropriate model. Today the pluralistic service delivery mechanisms partner with groups of beneficiaries in the identification and prioritization of local advisory needs (Chambers, 1997; Suvedi and Kaplowitz, 2016). The goal is to provide demand-driven services, and to do so, extension professionals need to be able to respond to farmers' requests rather than deliver predetermined packaged solutions. It is also time to enable the farmers to empower and make their voices heard. Equally important is to make the service providers accountable to the farmers, which is possible when the farmers pay for the services they receive.

## 1.5 SIGNIFICANCE OF THE STUDY AND RESEARCH QUESTIONS

The scope of EASs has been widening, and the need to adapt to changing contexts is also growing. The EASs should work in sustainable agricultural development and play coordinating and leadership roles among agricultural stakeholders (Rajalahti, 2012; Swanson, 2008). The challenges include offering new services, ensuring the quality of services, and strengthening collaboration and synergy among extension service providers (Sulaiman and Davis, 2012). Furthermore, extension services should become more participatory, demand-driven, and pluralistic (Rivera et al., 2009). This means that, in order to thrive, extension must understand and adjust to rapid changes and emerging challenges (ECOP, 2002). This calls for organizational changes and new tasks that indicate the need for multi-skilled human resources in EASs (Cochran et al., 2012). Because capable human resources help make efficient and sustainable use of other resources, the effectiveness of EASs depends greatly on the preparedness and competencies of extension professionals. Extension professionals with current knowledge who are able to make informed decisions about agricultural systems and who have skills needed for adaptation and facilitation can make significant contributions to extension services and thus to agricultural development (Hoffman, 2014; Qamar, 2006).

The agricultural training institutions have been slow to change. Training content, or the subject matter, was borrowed from British or American universities, and learning methods and materials are often outdated and inadequate. With the exception of a few cases, most teaching in agricultural education in South Asia consists

of presentations of theory and facts and focuses on technical skills. The instructors deliver knowledge and information to students as passive recipients. Students have little opportunity to develop critical thinking and problem-solving skills.

There have been few studies on core competencies of agricultural extension professionals in the South Asia region and no systematic assessment of agricultural extension training within major training institutions in India, Nepal, and Sri Lanka. Such an assessment of core competency skill gaps would help develop competency-based curriculum and curricular revitalization in the South Asia region. Also, this study could influence the future of agricultural extension training in the region, which in turn could promote agricultural and economic development there. On the basis of this study, agricultural colleges and universities in South Asia could revise/upgrade their agricultural extension curricula to develop the new generation of broadly competent extension professionals needed for agricultural development.

This study aimed to address the following research questions:

1. How effective are extension programs in addressing the needs of food and agricultural systems?
2. What are the critical job skills and core competencies required of extension workers to effectively plan, implement, and evaluate extension work in today's changing context?
3. Does the current UG curriculum in extension education include education and/or training on these job skills or core competencies?
4. What are the barriers to effectively training extension workers with required core competencies, and how can these barriers be removed?

## 1.6 OBJECTIVES

The overarching goal of this study is to assess agricultural extension curricula currently followed in the South Asia region at the undergraduate level and recommend revisions and reforms. The specific objectives include:

1. Review agricultural extension curricula currently in use in India, Sri Lanka, and Nepal at the undergraduate level.
2. Identify critical process skills or core competencies of agricultural extension professionals, process skills gaps, and areas of potential curricular reform.
3. Recommend improvements/reforms of agricultural extension curricula to prepare the next generation of agricultural extension professionals.

## 1.7 ORGANIZATION OF THE REPORT

The introductory chapter gives an overview of the agricultural sector and agricultural extension in India, Sri Lanka, and Nepal, the significance of the study, research questions, and objectives. The second chapter, on theoretical orientation, discusses process skills and competency gaps in UG agricultural extension curricula. The third chapter describes methods used in the study. The fourth chapter focuses on the results and discussion. The conclusions and policy implications of the study are briefly highlighted in the fifth chapter. References and the instruments used for quantitative and qualitative data collection are appended at the end.

# CHAPTER 2 - THEORETICAL ORIENTATION

## PROCESS SKILLS AND COMPETENCY GAPS IN AGRICULTURAL EXTENSION CURRICULA

### 2.1 CHALLENGES IN AGRICULTURAL EXTENSION

Because of its educational strategy and the dwindling number of professional staff members engaged under publicly funded systems, agricultural extension has reached a critical point. In the United States, for example, with fewer people engaged in production agriculture, the agricultural industry's demand for public extension professionals has fallen. In response, extension services are redirecting efforts beyond the needs of farmers to include urban consumers and youth. The traditional focus on yield increases has shifted to locally grown food and market-driven production. New programs in food, nutrition, and health are taking the place of traditional production-oriented agricultural EASs. Canada has experienced a gradual reduction in governmental funding for agricultural extension (Milburn et al., 2010). Countries in Western Europe, such as the United Kingdom and the Netherlands, have moved toward privatization of EASs. Extension services in the developing world also have changed. For example, in India, EASs are offered by multiple providers, and public-private partnership has been the buzz concept. The conventional top-down, supply- and technology-driven extension system no longer appears to be an appropriate model. Some countries have been promoting decentralized and/or bottom-up extension systems, and others are considering market-driven or fee-for-service systems.

Advancements in agricultural research, education, and communication have a direct impact on agricultural extension. Originally, most technologies, such as new crop varieties or breeds of livestock, were developed by public research institutions and were disseminated by public extension services. This is changing very quickly. Today, many technologies, such as hybrid seeds, pesticides, and information and communication technologies (ICTs), are being developed by international and national private sector firms. Private sector entrepreneurs have succeeded in providing communication services through Internet, radio, and television. Non-governmental organizations (NGOs) are extending education and training services for farmers and agribusinesses. In most countries, the central government provides an overall policy framework for extension, but a variety of actors -- public organizations, civil societies, or private firms-- provide a range of services to farmers and agribusiness operators. As a result, pluralistic extension systems are common in many countries.

### 2.2 KEY ELEMENTS IN CONTEMPORARY AGRICULTURAL EASs

The key elements embraced by contemporary agricultural EASs in various countries include:

- **Privatization** – In the United Kingdom, the public extension service has evolved over time into a private consulting business. In the Netherlands, farmers provide the majority of the funding for extension. Other forms of privatization include cost recovery, outsourcing, and contracting of extension services. Today, the private sector has been actively engaged in the supply of inputs and marketing services in many countries.
- **Pluralism** – Pluralistic systems are those that recognize the heterogeneity of the farming community and the need for diversity of extension service delivery systems. Multiple organizations, both public and non-public, deliver extension services. Examples include extension services delivered by governmental extension services and local NGOs in Mali, Nepal, and Bangladesh.
- **Decentralization** – Decentralization involves the transfer of decision-making functions to local levels, encourages public participation, and expands local involvement in organizing and delivering

extension services (Swanson and Rajalahti, 2010). Decentralized extension services are planned and implemented by district or sub-district level governments, as in Nepal, the Philippines, Tanzania, India, and Indonesia.

- **Gender Inclusion** – Women's roles and contributions to farming and household food production are well documented, and they have been recognized as equal beneficiaries of agricultural extension services. This recognition includes training of women as agriculturists, hiring women extension professionals, and serving women farmers.
- **Youth Orientation** – Employment and entrepreneurship development among youth has been a priority in many countries. Motivation and inclusion of youth in agricultural programs is strongly supported.
- **Research-Extension-Education-Market Linkages** – This issue has been widely recognized, but there has been a disconnect between research laboratories/stations, field extension, and marketing services; and agricultural training institutions and research, field extension, and marketing services.

Demand-driven --not supply-driven -- agricultural extension is the buzz concept today, which means that extension responds to what farmers or clientele ask for to satisfy their educational and informational needs. The hope is that clientele will value the educational advice received so much that they will be willing to invest their own resources to receive the service. Service providers under this approach would be accountable to the users, and the users would have free choice of service providers. Swanson (2008) argues that, to make these institutional changes, public extension systems must become more decentralized, farmer-led, and market-driven.

The emergence of a global economic system, expansion of scientific knowledge and discoveries, and the rapid spread of ICTs have had a profound impact on agricultural extension. To prevail, the agricultural extension system must (Axinn, 1988; Chambers, 1997; Swanson, 2008):

- Change its role from a supply-driven to a demand-driven system.
- Change from a top-down technology transfer system to a bottom-up participatory process.
- Serve the needs of female farmers, who have been neglected by traditional extension services in most developing countries.
- Learn to work in partnership with many public, not-for-profit, and private sector organizations that offer similar services to farmers and agribusiness operators.
- Be flexible to meet the educational and informational needs of new clientele groups.

These changes in the role of the extension system demand different competencies from extension professionals (Cooper and Graham, 2001). To carry out the new roles, extension professionals need different types of knowledge and attitudes along with more diverse skills and working patterns. Ultimately, this has tremendous implications for preservice training curricula (undergraduate and graduate levels) in agricultural extension education (Scheer et al., 2006). It also has implications for professional development of extension professionals—specifically, the content of in-service training programs. To put it simply, the changes taking place within the agricultural extension system call for significant changes in human capacity development programs at all levels.

This study focuses on the important job skills and competencies of extension workers and whether these competencies are adequately addressed in the training curriculum. The goal is to identify gaps and suggest areas for agricultural extension curricular revisions to better serve the needs of contemporary bottom-up, pluralistic, and demand-driven extension systems.

## 2.3 DESIRED CORE COMPETENCIES FOR AGRICULTURAL EXTENSION PROFESSIONALS

Employees are the most valuable assets of the extension system. The quality of educational programs heavily depends upon the professional role played by extension educators. To perform their roles effectively, all extension educators should possess sound technical knowledge and skills in the subject matter with which they work. These technical skills and competencies are necessary but are not sufficient for extension educators to serve effectively. To perform their extension roles effectively, they also need basic educators' process skills and competencies, which are known as core competencies.

Core competencies are collective organizational skills that are present or achievable and upon which the organization bases its primary operations and services (McLean, 1999). These are the fundamental capabilities needed for reliable job performance (Cooper and Graham, 2001; Ghore et al., 2006). Core competencies should include knowledge, attitudes, skills, and behaviors that contribute to excellence in extension programs.

Areas of skills and competencies for human capacity development have been a topic of debate and discussion in recent years. Food and agribusiness employers rank interpersonal skills and critical thinking twice as highly as production agriculture experience as components necessary for career success. In addition, graduates need to be knowledgeable about issues of globalization, the value of a diverse workplace, information literacy, and how their products/processes affect environmental sustainability (APLU, 2009).

According to the National Research Council of the National Academies (2009), agricultural graduates should develop competency in "teamwork and working in diverse communities, working across disciplines, communication, critical thinking and analysis, ethical decision making, and leadership and management" (p. 40). Professional associations and accreditation boards also have contributed to establishment of knowledge and competency requirements for graduation in various technical and vocational fields.

Professional extension educators are expected to hold some common knowledge and competencies that have relevance to extension work. The types of competencies, however, may vary from country to country. For example, extension staff in industrialized countries may require a higher level of computer skills than those in a developing country. Similarly, staff members having multiple roles -- such as educator, grant writer, and administrator -- need different competencies than those having a single function or role. For example, county extension directors in the United States, who have diverse roles, need a different set of competencies than an extension educator in Nepal whose primary role is technology transfer. Core competencies, when combined with sound technical skills, form the foundation for becoming a successful educator.

Michigan State University Extension (MSUE), for example, launched its core competency development initiative in 1993. A group of campus and off-campus staff members identified essential skill sets for extension educators. MSUE supports core competency development throughout the organization. It is designed to encourage each staff member to take responsibility for and be actively engaged in his/her professional development (MSUE, 2015).

Scholars and practitioners have proposed many areas of core competencies for agricultural extension educators (Cooper and Graham, 2001; Levine et al., 2002; Maddy et al., 2002; Scheer et al., 2006; Suvedi and Kaplowitz, 2016). Eight areas of process skills and competencies to address the needs of a demand-driven, decentralized, pluralistic, participatory extension system are described below.

### 2.3.1 PROGRAM PLANNING AND DEVELOPMENT

Developing educational programs and services with community input, establishing clear and relevant objectives, and making efficient use of resources to serve the needs of targeted audiences result in a strong impact. Planning is the most basic role of extension educators under the decentralized, pluralistic, demand-driven extension system. As a frontline educator, s/he should be able to:

- Understand the vision, mission, and goals of extension service.
- Know about national agricultural development strategies, programs, and policies.
- Assess informational or learning needs of farmers and agribusiness operators.
- Be aware of local/state/national agricultural development trends and policies.
- Engage stakeholders to establish local program priorities.
- Acquire resources to meet high priority needs.
- Apply adult learning principles to extension education.
- Actively establish working relationships with community partners. Empower partners to continually evolve into a self-sustaining service delivery system.

### 2.3.2 PROGRAM IMPLEMENTATION

The extension educator is responsible for effective program execution. To be effective, s/he should be able to:

- Use appropriate educational design to respond to local learning needs.
- Establish an instructional environment that is conducive to learning.
- Share instructional responsibilities with partner agencies.
- Promote learning in groups.
- Work in a team.
- Identify and use appropriate instructional materials.
- Involve volunteers in the delivery of instructional programs.
- Establish and utilize advisory committees.
- Provide timely feedback to participants/learners.
- Understand barriers to participation and/or learning.
- Assist learners in applying learning to real-life situations.

### 2.3.3 COMMUNICATION AND PUBLIC RELATIONS SKILLS

As planners, educators, and managers of local educational programs, extension workers must possess strong communication skills. These include:

- Knowledge of various types and styles of communication.
- Understanding of the information transfer model "diffusion of innovation" and the role of interpersonal communication in the innovation decision process.
- Effective public speaking skills.
- Effective listening in a variety of settings.
- Use computers and mobile phone services for communication.
- Use audiovisual aids such as charts, graphs, and puppet shows for presentation.
- Skill in writing project reports, news releases, grants proposals.

### 2.3.4 EDUCATIONAL AND INFORMATIONAL TECHNOLOGY

Agricultural extension systems were conceived of and developed in response to the information asymmetries of poor farmers, particularly those without access to many sources of communication (Aker, 2010). Advancements in ICTs have had a profound effect on extension. Effective exploitation of advances in ICTs will be necessary to disseminate research results more widely and rapidly (APLU, 2009). Using ICTs has

become a part of extension educators' daily work, so it is important that all extension educators possess the abilities to:

- Use computers for word processing and information access.
- Effectively use voice-based information delivery services such as telephone hotlines and extension call-in centers.
- Use radio dial-up and broadcasts to provide timely information about market prices, crop production alerts, or other topics.
- Use ICTs-based services to collect and disseminate information.
- Develop e-learning materials that allow clients to access Internet-based resources.
- Use mass media technologies (radio, television, newspaper, mobile phones, and Internet) for extension.
- Retrieve/share information via the Internet, YouTube, and mobile phones.
- Effectively use PowerPoint and other audiovisual materials for teaching adults.

### 2.3.5 FACILITATIVE LEADERSHIP

Facilitative leadership is the process of building a group's capacity to achieve its common goals. Successful extension work requires group facilitators and educators to:

- Understand group dynamics and effective team member roles.
- Understand basic approaches to conflict resolution.
- Respectfully deal with conflict and skillfully keep communication going.
- Understand facilitation and the role of a facilitator.
- Effectively record group work using a variety of methods.
- Use a variety of leadership approaches.
- Practice consensus decision making.

### 2.3.6 DIVERSITY AND MULTICULTURALISM

We live and work in communities with people having a variety of racial backgrounds (e.g., race, caste, ethnicity, or tribe), cultures, and religions or faiths. To be effective, extension educators should be able to:

- Understand diversity exists within and among clients and stakeholders.
- Identify the needs of women, small farmers, and minority groups.
- Engage people from different socio cultural groups in extension program development.
- Demonstrate sensitivity to the unique and diverse needs of various cultural groups in the community.
- Enhance participation of various cultural groups in extension programs and services.
- Effectively organize and offer programs that reflect laws and policies that support diversity and pluralism.

### 2.3.7 MARKETING AND PUBLIC RELATIONS

Every extension educator should promote extension's reputation, image, and awareness and support of programs. S/he should engage communities, decision makers, and users of extension services and media in promoting extension. Extension staff members should be able to:

- Use appropriate strategies for marketing educational programs.
- Know the availability of local technology for publicizing educational programs.
- Identify formal and informal community leaders and establish working relationships.

- Identify major political forces that operate in the community.
- Create strategic/competitive positions for extension in the local community.

### 2.3.8 APPLIED RESEARCH AND EVALUATION

We live in an era of accountability. Funding agencies continually ask for impacts of extension work. How good a job did we do? What impacts did we make? Why should we continue to do what we do? How can we improve our services?

Knowledge and skills in applied research and evaluation help answer these questions. Evaluation is needed to answer accountability questions (Frechtling et al., 2002; Ghere et al., 2006). Results add to the scholarly work of learning that helps us improve programs and document the net social value of extension programs. Sharing evaluation results with stakeholders strengthens support for our programs. Thus, every extension educator should be able to:

- Understand the various types and levels of program evaluation.
- Develop outcomes and indicators to evaluate a program.
- Design evaluation instruments and understand the uses of participatory evaluation.
- Design and implement formative and summative evaluations.
- Apply quantitative and qualitative data analysis tools and techniques to analyze and interpret evaluation data.
- Communicate findings to appropriate audiences.
- Use results of evaluation to improve programming.

It should be noted that the above competencies are core to the extension profession. They are needed irrespective of extension position assignment, whether field crop educator, livestock educator, or nutrition educator. Additional managerial competencies are needed by those who have administrative responsibilities.

One of the greatest challenges is that extension staff members often do not have the appropriate and updated skills to perform effectively. Knowledge and skill levels among extension workers vary greatly. This is due primarily to variations in types and quality of pre- and in-service training programs for extension professionals. In many countries, fiscal constraints have forced public extension systems to hire staff members having few competencies or skills. Many extension organizations do not have a well-defined system of in-service training for systematic staff development.

The problem of professional incompetence among frontline extension educators has been a persistent issue within extension. Related to this problem is lack of motivation among extension employees to develop the core competencies needed for their jobs. Some of the pertinent related questions are:

- How do we establish a vibrant staff development unit?
- How do we motivate workers to participate in professional development programs?
- What mechanisms should we have to reward staff members who excel in these professional competencies or disincentivize those who consistently lack these skills?

## 2.4 TECHNICAL SKILLS AND COMPETENCIES

The need and demand for extension professionals to demonstrate a higher level of professionalism in their services are growing. As Maddy et al. (2002) stated, "Extension employees should possess the necessary competencies to anticipate and deliver quality educational programs of relevance and importance to our publics" (p.1). On a similar note, Qamar (2006) stated that extension workers work in harsh field conditions with limited

facilities and less than well-educated clients. Only trained, motivated, and competent staff members can work and succeed in such difficult conditions.

Extension professionals are the main assets of agricultural extension services. The competency of extension professionals is directly related to their performance. “Competence” refers to the general capability of persons (or organizations) to perform a task or to solve an emerging problem. A higher level of competency leads to higher efficiency in services, better performance, and higher satisfaction among staff members and their clients.

Seevers et al. (2007) used the term “core competency” to describe the basic knowledge, skills, attitudes, and behaviors that contribute to workers’ excellence in their respective professions (e.g., extension education). The terms “competencies” and “core competencies” are used interchangeably in the literature. In this study, “core competencies” refers to “process skills” or “soft skills” required to perform a job well.

Developed countries are at the forefront on core competency studies. Agricultural universities and other educational/vocational institutions conduct periodic assessments on vocational and technical educational needs including process skills and competencies required for successful professions, and these core competencies are integrated into their curricula. Gibson and Hillison (1994) identified nine core competencies for extension professionals:

- Communication.
- Educational process.
- Effective thinking.
- Extension organization and administration.
- Program planning and development.
- Research and evaluation.
- Technical knowledge.
- Understanding human development.
- Understanding the social system.

Concurrently, the Extension Committee on Organizational Policy (ECOP) has been involved in designing strategies for extension services, including core competencies for U.S. Cooperative Extension professionals. These documents—Gibson and Hillison (1994) and ECOP (2002) -- have been instrumental in helping U.S. universities develop their staff members’ core competencies and inspired other organizations in the United States and globally to develop and redevelop their staffs’ core competencies.

Few studies on core competencies for agricultural extension professionals have been conducted in Europe (Mulder, 2014), Asia (Khalil et al., 2009; Rigyal and Wongsamun, 2011; Tiraieyari, 2009; Tiraieyari et al., 2010), and Africa (Issahaku, 2014; Okwoche and Asogwa, 2012). These studies have some common messages:

- Contexts are changing.
- Competition for resources is increasing.
- Clients are more aware of their need for services than before.
- Clients are demanding quality, reliable, and performance-based services.

Extension professionals have to be prepared with the knowledge, skills, and behaviors to help meet these demands and needs of clients, including those in the south Asian countries of India, Sri Lanka, and Nepal.

Because extension workers are the most valuable assets of successful agricultural development programs, the skills, knowledge, behaviors, and abilities of extension service professionals should be periodically assessed, and job descriptions and a system for job analyses should be in place to counter various challenges facing

extension services (Sarkar, 2013). Scholars have argued that agricultural extension services in most developing countries are weak because the roles of staff members are poorly defined and job expertise and accountability are largely lacking (Axinn, 1988; Urmani and Jain, 2010). Studies on essential knowledge, skills, behaviors, and abilities—core competencies—of extension professionals are lacking. Human resource management in agricultural extension services, therefore, remains a challenge. This study seeks to identify important core competencies of extension professionals and determine the extent to which these competencies are covered in the preservice training curricula in India, Sri Lanka, and Nepal.

Agricultural universities and vocational/technical training institutions are responsible for producing agricultural development professionals who can shoulder the responsibilities of enhancing sustainable agricultural systems (Dubois et al., 2004; Baker, 2015). Training of agricultural development professionals falls into two broad areas:

- Technical skills and competencies.
- Process skills and competencies.

Mastery in crop and animal husbandry, soil testing, pest and disease management, and seed production and storage are examples of technical skills and competencies. Training of extension workers with current and up-to-date technical skills, of course, is essential for extension work. For example, identifying the causal organism of maize disease, testing the soil pH and interpreting the results, and conducting a method demonstration on how to perform artificial insemination on dairy cattle are examples of technical competencies (Suvedi and Kaplowitz, 2016). On the other hand, equally important is the training of agricultural extension workers on process skills and competencies. Establishing rapport with farming communities, networking with local organizations, facilitating group formation, resolving conflict, and engaging stakeholders in program planning, implementation, and evaluation are examples of process skills or functional competencies (ECOP, 2002; Harder et al., 2010; Suvedi and Ghimire, 2015; Ghimire, 2016). A good extension educator needs to possess both process and technical skills.

In the present context of demand-driven, pluralistic, and participatory extension service, it is essential that extension workers possess the process skills and competencies demanded by the profession. Extension workers must understand that their clients are more aware of their need for services than before, competition for resources is increasing, and their clients are demanding quality, reliable, and performance-based services. Extension professionals are judged on how they serve their clients, whether they listen to their clients, and how familiar they are with their clients' contexts and issues. Extension professionals need to possess strong communication and public relations skills, value diversity, and acquire education and information technology skills, and critical thinking, teamwork, entrepreneurship, and leadership skills.

South Asian countries initiated nationwide agricultural extension services during the 1960s. Extension curriculum was adapted mainly from the U.S. land-grant universities or European universities. In India, for example, the Indian Council for Agricultural Research Institutes and State Agricultural Universities (SAUs) were focusing on research and teaching, and state line departments with field extension. Various approaches to extension services were implemented to increase food production. Currently, KVKs are instrumental in field-testing technologies and teaching farmers about new farming innovations and agribusiness management practices.

The context of extension is changing with the development of new infrastructures and ICTs. To undertake effective extension, which is critical for bringing about behavioral changes among farmers, extension professionals need to have a wide range of skill sets, such as planning and implementing demand-driven, participatory, and pluralistic services, working with diverse clients, using ICTs, and employing teamwork skills. Extension staff development should start with their education, especially at the undergraduate level. Discussions held at the National Workshop on Agricultural Extension in India concluded that extension curricula currently used in Indian universities have remained more or less static over the past two decades (Bhatt et al., 2018). Other major issues have been the limited connection between research and front

line extension efforts, and the lack of university support to strengthen field extension through research. Participants pointed out a mismatch between the changing role of extension and the curricula in extension education and suggested that universities should ensure that students acquire these skill sets before they leave their premises.

An analysis of agricultural extension curricula reported that almost 80 percent of the syllabus was similar across universities and has not been updated in several years. As a result, new graduates are virtually unfit for emerging job positions (Sulaiman et al., 2018). Consequently, the job market for extension graduates is limited to a very few positions available under agricultural research services or universities. The authors articulated the need for identifying core extension competencies that are required by agricultural graduates and building up courses that support the development of these among students and also suggested conducting an online survey among potential employers as well as employed agricultural graduates.

The undergraduate curricula in extension education in Sri Lanka and Nepal have been strongly influenced by India because most faculty members received training in India. The course content is similar except at some universities in Sri Lanka where extension courses are integrated into agribusiness management programs. Nepal has added courses in rural sociology within departments of agricultural extension.

There have been few studies on core competencies of agricultural extension professionals in the South Asia region. Sasidhar and Suvedi (2016, 2018) conducted an assessment of core competencies of livestock extension professionals in India and reported that extension workers lacked adequate competencies in program development and evaluation. Extension workers in Nepal perceived themselves to be moderately competent in extension core competencies such as program planning, program implementation, communication skills, educational and informational technology, program evaluation, personal and professional development, diversity, and technical subject matter expertise (Ghimire, 2016). The perceived levels of the importance of extension worker competencies were significantly higher than the professionals' perceived levels of their own competency, indicating gaps in extension core competencies among Nepalese extension professionals.

Ideally, training curriculum for professional workers should be developed after careful assessment of local needs and contexts. Reports indicate that agricultural universities adopted their curricula from the British and American universities where many of the first generation faculty members received their academic training. The course content and pedagogy of the 1960s are often outdated and inadequate. With the exception of a few cases, most teaching in agricultural education consists of presentations of theory and facts and focuses on technical skills. The instructors deliver knowledge and information to students as passive recipients. Students have little opportunity to develop critical thinking and problem-solving skills. And agricultural universities and extension training institutions have been slow to change.

Given the changing agriculture scenario, extension professionals need to perform new roles as educators, facilitators, coordinators, social researchers, trainers, change agents, and information brokers. This requires state-of-the-art technical subject-matter training accompanied by education in process skills competencies including program planning, program implementation, use of information and communication technologies, and program evaluation.

Identification of important job skills and competencies for extension workers and how well these competencies are incorporated in the extension training curriculum is critical to determining gaps in developing competency-based curriculum and revitalization of the extension curriculum in the region. First, determining the perceived importance of job skills and competencies is indicative of what value workers give to those competencies and how willing the workers are to acquire and/or possess them. Second, how well does the undergraduate training curriculum address these skills or competencies to prepare students to succeed in extension careers? The gap or difference between the level of importance of job skills and how well these job skills are addressed in the

extension curriculum determines the educational efficacy of extension worker training. As Liles and Mustian (2004) and Mulder (2010) pointed out, job skills and competency needs are context-specific, and individuals' personal characteristics will influence their perceptions of the importance of a competency and how well the curriculum prepares students with these job skills and competencies.

A systematic assessment of agricultural extension training needs within major training institutions in India, Sri Lanka, and Nepal is lacking. Systematic assessment of training needs from employers and industry perspectives is also lacking (Sulaiman et al., 2018). This study is designed to fill this need -- identifying gaps between important and critical extension worker job skills and competencies and the extent to which the undergraduate agricultural extension curriculum addresses these job skills and competencies. This study is designed to assess perspectives of agricultural development professionals at the national, state, and local levels, including research, education, and extension professionals, and representatives of non-governmental organizations and the private sector.

## CHAPTER 3 – METHODOLOGY

### 3.1 STUDY LOCALE AND SAMPLING

The study was undertaken in three South Asian countries: India, Sri Lanka, and Nepal during August 2019 to May 2020. An online survey was conducted for collecting quantitative data in the three countries.

For gathering qualitative data, focus group discussions (FGDs) were planned and conducted in 12 locations -- seven in India and five in Sri Lanka. Because of the COVID-19 pandemic lockdown, the planned FGDs in Nepal could not take place.

### 3.2 OPERATIONALIZATION AND MEASUREMENT OF VARIABLES

The title of the study in India, Sri Lanka, and Nepal was *“Strengthening Agricultural Extension Training in South Asia --Process Skills and Competency Gaps in Undergraduate Agricultural Extension Curricula.”* A combination of process skills and competencies enables agricultural extension professionals to be more effective in addressing clients’ needs. The respondents were asked to keep this in mind while completing the online survey questionnaire.

#### 3.2.1 AGRICULTURAL EXTENSION PROFESSIONALS

To have perspectives from a variety of stakeholders, the following were operationally included as agricultural extension professionals in this study:

- Directors of extension, extension department heads, extension faculty members, researchers, and subject matter specialists working in ICAR research institutions, state agricultural, veterinary, and fisheries universities, central agricultural universities, central universities / farm science centers, and KVKs.
- Agriculture, veterinary, home science, and fisheries officers working in state government departments.
- Employers and extension graduates working for NGOs and/or private sector companies.
- Postgraduate (PG) and Ph.D. students in extension.

The demographic information of respondents -- gender, experience, academic qualification, primary employer, and current position -- was collected. The responses were tabulated using frequencies and percentages.

#### 3.2.2 PROCESS SKILLS AND CORE COMPETENCIES

Process skills and core competencies in the present study were operationalized as the basic sets of knowledge, skills, abilities, and behaviors that agricultural extension professionals require to perform their tasks well in the following eight areas:

1. Program planning
2. Program implementation
3. Communication and public relations
4. Information and communication technologies (ICTs)
5. Program evaluation
6. Personal and professional development
7. Diversity and gender
8. Technical subject matter expertise

Keeping in mind the current extension roles and responsibilities, the above eight broad areas of competencies required by agricultural extension professionals were identified and included in the online survey instrument (Annexure 1).

**3.2.2.1 Program Planning Skills and Competencies:** “Program planning skills and competencies” was operationalized as direction and intensity of agricultural extension efforts to bring about desirable change

among clients in view of national agricultural development strategies, programs, and policies. Seven items in the questionnaire assessed this area of competency.

**3.2.2.2 Program Implementation Skills and Competencies:** “Extension program implementation skills and competencies” was operationalized as ability of agricultural extension professional to coordinate extension programs, demonstrate teamwork and negotiation skills, engage diverse local stakeholders, delegate responsibilities, and follow participatory decision making in extension work. Seven questionnaire items assessed this competency.

**3.2.2.3 Communication and Public Relations Skills and Competencies:** “Communication and Public Relations Skills and Competencies” was operationalized as ability of agricultural extension professionals to respect local culture, prepare reports of their work, share success stories and lessons learned, use various communication channels to disseminate information about important extension activities and programs, and possess good listening and public speaking skills. Six questionnaire statements were administered to assess this competency.

**3.2.2.4 ICTs Skills and Competencies:** “ICTs skills and competencies” was operationalized as ability of extension professionals to use computers, audiovisual aids, mass media, mobile phones, and social media for communication, teaching, and learning. The questionnaire used seven items to assess this competency.

**3.2.2.5 Program Evaluation Skills and Competencies:** “Program evaluation skills and competencies” was operationalized as ability of agricultural extension professionals to understand monitoring and evaluation concepts, conduct monitoring and evaluation of extension programs, develop data collection instruments, apply qualitative and quantitative tools to collect evaluation data, analyze data, write evaluation reports, and share results with stakeholders. Seven questionnaire items were administered to assess this competency.

**3.2.2.6 Personal and Professional Development Skills and Competencies:** “Personal and professional development skills and competencies” was operationalized as ability of agricultural extension professionals to practice principles of good governance, show commitment to career advancement, apply professional ethics in work, follow organizational policies and directives, and demonstrate positive attitudes toward extension work. Five questionnaire items were administered to assess this competency.

**3.2.2.7 Diversity and Gender Skills and Competencies:** “Diversity and gender skills and competencies” was operationalized as ability of agricultural extension professionals to understand diversity within and among stakeholders, identify their needs, develop extension programs to benefit and engage women and various social and marginalized groups, and do teamwork with diverse staff members at various levels. The questionnaire included five items to assess this competency.

**3.2.2.8 Technical Subject Matter Expertise/Skills and Competencies:** “Technical subject matter expertise / skills and competencies” was operationalized as ability of agricultural extension professionals to demonstrate basic disciplinary knowledge, understand the new technology being promoted, educate community members about various types of risks and uncertainties, refer to and make use of publications, demonstrate basic knowledge of agribusiness management, and facilitate entrepreneurship development among extension clientele. Six questionnaire items assessed this competency.

Keeping in mind their experience in agricultural extension work, respondents were asked to rate the above eight process skills and competencies on the following (Annexure 1):

- a. How important is this skill or competency? Respondents rated items on 1 to 5 scales with 1 being not important; 2 = somewhat important; 3 = average; 4 = important; and 5 = essential.
- b. How well does our UG extension curriculum address this competency? Respondents were asked to rate the statements on 1 to 5 scales with 1 =not at all covered; 2=minimally covered; 3=moderately well covered; 4 = very well covered; and 5 =extremely well covered.

### 3.2.3 APPROPRIATE WAYS TO ACQUIRE CORE COMPETENCIES

“Appropriate ways to acquire core competencies” was operationalized as perceptions of agricultural extension professionals on acquiring the competencies through pre-service training by revising or updating the UG curricula; internship in various work environments during the UG programs; basic induction training at the beginning of a job; in-service training; and opportunities to attend trainings, seminars, workshops, webinars, etc. The respondents were asked to rate them on a four-point Likert scale --i.e., not appropriate, somewhat appropriate, appropriate, and very appropriate, with scores of 1, 2, 3, and 4, respectively. The responses were tabulated using frequencies and percentages.

### 3.2.4 MAJOR BARRIERS TO EFFECTIVE IMPLEMENTATION OF EXTENSION CURRICULUM

The respondents were asked through open-ended questions to write three major barriers to effective implementation of the extension curriculum. The important barriers perceived by most of the respondents were tabulated using frequencies and percentages.

## 3.3 DESIGN AND DEVELOPMENT OF THE SURVEY INSTRUMENT

The questionnaire with all the above variables was developed after careful review of literature and past survey instruments and formatted using the Qualtrics software and pretested with 12 faculty members from the School of Extension and Development Studies and School of Agriculture, IGNOU, New Delhi. On the basis of the pretesting, the questionnaire was modified and finalized for data collection (Annexure 1). The Institutional Review Board (IRB) approval for human subjects research was obtained from Michigan State University (MSU).

## 3.4 DATA COLLECTION AND ANALYSIS

Email lists of agricultural extension professionals in India, Sri Lanka, and Nepal were compiled by scanning the websites and directories of research institutions, agricultural, veterinary, and fisheries universities, central agricultural universities, central universities, KVVs, / state government departments, NGOs, and private sector companies. Emails of agricultural extension professionals were also obtained from professional associations such as Agricultural Extension in South Asia (AESA), the Indian Society of Extension Education (ISEE), the Indian Agricultural Extension Network (IAEN), the Nepal Agriculture Extension Association (NAEA), the Sri Lanka Network of Agricultural Extension and Advisory Services (NAEASL), etc. The mailing lists were merged and duplicate emails were removed. Using the Qualtrics software, the online survey questionnaire was administered to about 5000 agricultural extension professionals in India, Sri Lanka, and Nepal, and three reminders were sent to non-respondents to increase the response rate. The heads of extension departments and faculty members were requested to forward the survey link to their colleagues, research scholars, PG and Ph.D. students. The online survey link was also shared with the participants of all the FGDs. The filled in questionnaires were checked for completion, and incomplete surveys were excluded from the analysis. A total of 628 respondents completed the online survey -- 424 from India, 119 from Sri Lanka, and 85 from Nepal. It should be noted, however, that a few questions/items were not completed by some of the respondents. Hence, the respondents number (N) is incorporated in the results section separately for each item in the tables. The data were analyzed using the SPSS software, and results are presented by country.

## 3.5 FOCUS GROUP DISCUSSIONS

To collect qualitative data on process skills and competency gaps in agricultural extension curriculum, focus group discussions (FGDs) were planned and conducted in 12 locations -- seven in India and five in Sri Lanka. One FGD at the Indian Veterinary Research Institute (IVRI), Bareilly, was scheduled but had to be cancelled because of a travel advisory. The scheduled FGDs in Nepal could not take place because of the COVID-19 pandemic.

The objectives of these FGDs were to gather qualitative information, including perceptions of local agricultural contexts, critical job skills, and core competencies required of extension workers, their coverage in the current undergraduate (UG) curriculum, and the barriers to effectively training extension workers. The details of FGDs conducted in India and Sri Lanka are given below.

### 3.5.1 FGDs IN INDIA

- 24/09/2019: Lady Irwin College, Delhi University, New Delhi— six faculty members and 25 graduate students participated in the discussion.
- 23/10/2019: School of Agriculture at IGNOU, New Delhi – five faculty members participated in the discussion.
- 08/11/2019: Tamil Nadu Agricultural University, Coimbatore -- 15 faculty members and 28 PG/Ph.D. students participated in the discussion.
- 15/11/2019: Assam Agricultural University, Guwahati -- 12 faculty / KVK staff members and 12 PG/Ph.D. students participated in the discussion.
- 02/12/2019: Indian Agricultural Research Institute (IARI), New Delhi -- 13 faculty members and 32 PG/Ph.D. students participated in the discussion.
- 16/12/2019: P.V. Narasimha Rao Telangana Veterinary University, Hyderabad -- 14 faculty members and 20 PG/Ph.D. students participated in the discussion.
- 19/12/2019: National Dairy Research Institute (NDRI), Karnal – six faculty members and 11 PG/Ph.D. students participated in the discussion.

### 3.5.2 FGDs IN SRI LANKA

- 10/02/2020: Sabaragamuwa University of Sri Lanka – four faculty members and six field extension functionaries participated in the discussion.
- 12/02/2020: Agriculture Extension Department, Peradeniya University, Candy – eight faculty members and the dean participated in the discussion.
- 12/02/2020: Faculty of Veterinary Medicine, Peradeniya University, Candy – 10 faculty members and the dean participated in the discussion.
- 12/02/2020: Department of Agriculture Extension and Training, Candy – five senior officials participated in the discussion.
- 12/02/2020: Department of Animal Production and Health, Candy – 14 senior officials participated in the discussion.

The question router used in the FGDs described briefly the background about the research study and the objectives of the FGDs, which considered nine questions (Annexure 2).

## 3.6 LIMITATIONS OF THE STUDY

Considerable care and thought were exercised in making the study as objective and systematic as possible. Though every care was taken to collect and interpret the relevant information, there could be some distortion in the interpretation of the responses. The opinions of the respondents may not be free from individual biases and prejudices. It may be recognized that the findings of the study should not be generalized beyond India, Sri Lanka, and Nepal, where the study was conducted. In other words, generalizations of results should be applied in the broader context only to other South Asian countries where similar situations prevail.

## CHAPTER 4 - RESULTS AND DISCUSSION

The findings of the study are presented in the first part of this chapter by country – India, Sri Lanka, and Nepal -- and are discussed together in the second part of the chapter.

### 4.1 RESULTS - INDIA

#### 4.1.1 DEMOGRAPHICS OF AGRICULTURAL EXTENSION PROFESSIONALS IN INDIA

The results on current positions of respondents in India showed that the majority of them (32.6%) were serving as extension faculty members in agriculture, veterinary, home science, and fishery colleges, followed by extension PG and Ph.D. students (26.5%), and extension researchers (18.6%). The majority (57%) of the respondents had doctorates in agricultural/veterinary /home science extension. A quarter (25%) were postgraduate students. A large share (38.5%) of the respondents were primarily employed in SAUs / SVUs as extension faculty members, followed by in ICAR as extension researchers (23.8%) and in central / state extension departments as middle-level extension functionaries (10.4%). The majority of the respondents (67%) were male (Table 4.1).

**Table 4.1: Demographics of Agricultural Extension Professionals in India**

Category	Frequency (%)
<b>(a) Current Position (N=424)</b>	
Director of Extension	7 ( 1.6)
Head, Extension Department	25 (5.9)
Extension Faculty Member	138 (32.6)
Extension Researcher	79 (18.6)
Extension Subject Matter Specialist in KVK	28 (6.6)
Central / State Department Extension Functionary	24(5.6)
Extension Functionaries in Private Sector and NGOs	11 (2.6)
Extension PG and Ph.D. Students	112 (26.5)
<b>(b) Education Background (N=354)</b>	
Associate Degree / Diploma	44 (12.0)
Bachelor's Degree in Agriculture / Allied Subjects	19 (5.0)
Master's in Agricultural / Veterinary / Home Science Extension	89 (25.0)
Ph.D. in Agricultural / Veterinary / Home Science Extension	202 (57.0)
<b>(c) Primary Employer (N=345)</b>	
State Agricultural / Veterinary Universities ( SAUs / SVUs)	133 (38.5)
Indian Council of Agriculture Research ( ICAR)	82 (23.8)
Central / State Extension Departments	36 (10.4)
Central Agricultural Universities / Central Universities	22 (6.4)
Others	72 (20.9)
<b>(d) Gender (N=354)</b>	
Male	238 (67.0)
Female	116 (33.0)

#### 4.1.2 PROGRAM PLANNING SKILLS AND COMPETENCIES

The mean scores of all seven program planning skills and competencies on “How important is this skill or competency?” were higher than their corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.2).

**Table 4.2: Program Planning Skills and Competencies**

Program Planning Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Familiar with the vision, mission, and goals of extension service.	424	4.5	0.7	3.2	0.9
Knowledgeable about national agricultural development strategies, programs, and policies.	424	4.5	0.7	3.1	0.9
Able to engage stakeholders to conduct needs assessment.	424	4.4	0.7	2.7	1.0
Able to engage stakeholders to prioritize local needs.	424	4.3	0.8	2.7	1.1
Able to acquire resources to address priority needs.	424	4.3	0.8	2.7	1.0
Able to engage local development partners such as NGOs, women’s groups, and cooperatives in extension program.	424	4.4	0.7	2.9	1.1
Familiar with government administrative and financial rules and regulations.	424	4.3	0.9	2.6	1.1

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.1.3 PROGRAM IMPLEMENTATION SKILLS AND COMPETENCIES

The mean scores on “How important is this skill or competency” for all seven program implementation skills and competencies were higher than their corresponding mean scores on “How well does our UG extension curriculum address this competency?” in all seven aspects (Table 4.3).

**Table 4.3: Program Implementation Skills and Competencies**

Program Implementation Skills and Competencies–	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Coordinate extension programs and activities within district and sub-district level.	406	4.3	0.7	2.7	1.0

Demonstrate teamwork skills to achieve extension results.	401	4.5	0.7	2.9	1.0
Engage local stakeholders in implementing extension program activities.	401	4.5	0.7	2.8	1.0
Demonstrate negotiation skills to reach consensus and resolve conflicts.	398	4.3	0.8	2.5	1.0
Follow participatory decision-making model in extension work.	395	4.5	0.7	2.9	1.1
Delegate responsibilities to staff as needed.	397	4.3	0.7	2.7	1.1
Be able to engage women farmers and members of minority groups in extension works.	393	4.4	0.8	2.8	1.1

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.1.4 COMMUNICATION AND PUBLIC RELATIONS SKILLS AND COMPETENCIES

The mean scores of all six communication and public relations skills and competencies on “How important is this skill or competency?” were higher than their corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.4).

**Table 4.4: Communication and Public Relations Skills and Competencies**

Communication and Public Relations Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Respect local culture while communicating with clients.	387	4.6	0.6	3.4	0.9
Prepare monthly, quarterly, and annual progress reports of their extension works.	386	4.3	0.8	2.9	1.1
Share success stories and lessons learned with stakeholders through various media.	388	4.5	0.6	3.0	1.1
Use various communication channels to disseminate information about important extension activities and programs (e.g., farmers' field day, disease and pest epidemics).	386	4.6	0.6	3.4	1.0
Possess good listening skills and listen to all clients and stakeholders.	384	4.5	0.7	3.1	1.1
Demonstrate good public speaking skills.	385	4.5	0.7	3.1	1.1

Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.

#### 4.1.5 ICTs SKILLS AND COMPETENCIES

The mean scores of all the seven ICTs skills and competencies on “How Important is this skill or competency” were higher than their corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.5).

**Table 4.5: Information and Communication Technologies (ICTs) Skills and Competencies**

Information and Communication Technologies Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Microsoft Excel for data entry and data analysis.	373	4.4	0.7	2.9	1.2
Microsoft Word for word processing (e.g., typing, editing, printing) and designing graphics.	369	4.5	0.7	3.0	1.2
Microsoft PowerPoint for making presentations.	370	4.6	0.6	3.2	1.2
Audiovisual aids such as charts, graphs, and puppet shows for teaching and learning.	372	4.5	0.8	3.5	1.1
Mass media such as FM radio stations and television channels for communication.	368	4.5	0.7	3.1	1.1
Computers (email, Internet, and web pages) for communication.	369	4.6	0.6	3.3	1.1
Mobile phone services and social media (e.g., Facebook, Twitter, WhatsApp, texting, SMS service) for communication.	367	4.6	0.7	3.2	1.2

Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.

#### 4.1.6 PROGRAM EVALUATION SKILLS AND COMPETENCIES

The mean scores on “How important is this skill or competency?” for all seven program evaluation skills and competencies were higher than their corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.6).

**Table 4.6: Program Evaluation Skills and Competencies**

Program Evaluation Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Understand and explain theories and principles of monitoring and evaluation.	361	4.3	0.7	3.0	1.1
Conduct monitoring and evaluation of extension programs.	356	4.5	0.6	2.8	1.1
Develop data collection instruments for monitoring and evaluation of extension works.	358	4.5	0.7	2.9	1.1
Apply qualitative tools and techniques (e.g., focus group discussion, in-depth interview, etc.) to collect evaluation data.	361	4.5	0.7	2.9	1.1
Apply quantitative tools and techniques (e.g., survey, interview, farm data) to collect evaluation data.	354	4.5	0.6	3.1	1.1
Analyze data (qualitative and quantitative), interpret data, and write evaluation report.	358	4.6	0.6	2.9	1.1
Share evaluation reports within their organizations and with stakeholders.	357	4.5	0.7	2.7	1.2

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.1.7 PERSONAL AND PROFESSIONAL DEVELOPMENT SKILLS AND COMPETENCIES

The mean scores on “How important is this skill or competency?” for all five personal and professional development skills and competencies were higher than their corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.7).

**Table 4.7: Personal and Professional Development Skills and Competencies**

Personal and Professional Development Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Practice principles of good governance (i.e., participation of clients, accountability to clients, transparency).	353	4.3	0.7	2.6	1.1

Show commitment to career advancement (participate in lifelong learning, in-service training programs, professional meetings and conferences).	353	4.3	0.8	2.6	1.1
Apply professional ethics in work -- i.e., promote research-based recommendation or technology, honesty, and integrity.	355	4.5	0.7	2.6	1.1
Follow organizational policies and directives for in-service training and professional development.	352	4.3	0.8	2.7	1.1
Demonstrate positive attitude toward extension work.	353	4.6	0.6	3.0	1.1

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.1.8 DIVERSITY AND GENDER SKILLS AND COMPETENCIES

The mean scores on “How important is this skill or competency?” for all five diversity and gender skills and competencies were higher than their corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.8).

**Table 4.8: Diversity and Gender Skills and Competencies**

Diversity and Gender Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Understand that diversity exists within and among clients and stakeholders.	348	4.4	0.7	2.8	1.1
Identify the needs of women, small farmers, and minority groups.	347	4.6	0.6	2.9	1.0
Develop extension programs to benefit women farmers.	347	4.4	0.7	2.8	1.1
Engage various social and marginalized groups in extension programs.	346	4.4	0.7	2.7	1.1
Do teamwork with diverse staffs at district and subdistrict levels.	346	4.5	0.7	2.6	1.1

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.1.9 TECHNICAL SUBJECT MATTER EXPERTISE/SKILLS AND COMPETENCIES

The mean scores on “How important is this skill or competency?” for all six technical subject matter expertise/skills and competencies were higher than their corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.9).

**Table 4.9: Technical Subject Matter Expertise/Skills and Competencies**

Technical Subject Matter Expertise / Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Demonstrate that they have basic knowledge in their discipline (e.g., field crops, horticultural crops, livestock, IPM, fishery, etc.).	341	4.5	0.7	3.1	1.1
Understand the new technology being promoted -- what it is, why and how it works.	343	4.6	0.6	3.0	1.1
Be able to educate community members about different types of risks and uncertainties (due to climate change, market fluctuations, natural disasters, etc.).	343	4.4	0.7	2.7	1.1
Refer to and make use of publications--journals, research reports, etc.	345	4.3	0.8	2.8	1.1
Demonstrate basic knowledge of agribusiness management.	340	4.4	0.7	2.7	1.0
Facilitate entrepreneurship development among extension clientele.	339	4.5	0.7	2.8	1.1

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.1.10 SUMMARY OF PROCESS SKILLS AND CORE COMPETENCIES AMONG AGRICULTURAL EXTENSION PROFESSIONALS IN INDIA

The mean scores on level of importance of all eight process skills and core competencies of agricultural extension professionals in India were higher than their corresponding mean scores on level of coverage in UG courses (Table 4.10).

**Table 4.10: Summary of Process Skills and Core Competencies among Agricultural Extension Professionals in India (N = 372)**

Extension process skills and competencies	Level of importance	Level of coverage in UG courses	Mean diff. (SD)
	(Mean (SD))	Mean (SD)	
Program planning	4.42 (0.51)	2.83 (0.81)	1.59 (0.95)
Program implementation	4.41 (0.51)	2.76 (0.86)	1.64 (1.00)

Communication and public relations skills	4.52 (0.48)	3.15 (0.85)	1.37 (0.96)
Information and communication technology (ICTs)	4.53 (0.49)	3.19 (0.96)	1.34 (1.07)
Program evaluation	4.52 (0.49)	2.87 (0.98)	1.64 (1.11)
Personal and professional development	4.43 (0.59)	2.70 (1.00)	1.73 (1.17)
Diversity and gender skills	4.46 (0.51)	2.75 (0.91)	1.71 (1.03)
Technical subject matter expertise	4.46 (0.53)	2.85 (0.91)	1.60 (1.05)

Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.

#### 4.1.11 APPROPRIATE WAYS TO ACQUIRE THE CORE COMPETENCIES

The appropriate ways to acquire core competencies were measured on a four-point Likert scale: not appropriate, somewhat appropriate, appropriate, and very appropriate, with scores of 1,2,3, and 4, respectively. The range of mean values was 3.2 to 3.4 for the five methods out of the maximum score of 4.0, indicating that these five methods are appropriate to very appropriate to acquire the skills and competencies (Table 4.11).

**Table 4.11: Appropriate Ways to Acquire the Core Competencies**

Appropriate ways	N	Mean	SD
Using revised or updated UG curricula.	342	3.2	0.7
Requiring internship at various work environments (i.e., public institutions, NGOs, private companies, etc.) during bachelor's degree (UG) programs.	338	3.4	0.7
Through basic induction training (job orientation training at the beginning of job).	336	3.3	0.7
Through in-service training (training offered during the employment period).	335	3.4	0.7
Through opportunities to attend trainings, seminars, workshops, webinars, etc.	333	3.4	0.7

#### 4.1.12 MAJOR BARRIERS TO EFFECTIVE IMPLEMENTATION OF EXTENSION CURRICULA

The major barriers to effective implementation of extension curriculum include “Budget to support practical learning experience”, which was perceived by 20.6% of respondents, followed by “Quality faculty to teach extension courses (16.4%)”, “Student motivation in practical extension work (15.3%)”, “Teacher motivation to teach required process skills and competencies (15.1%)”, “Classroom and demonstration facilities (13.8%)”, and “Quality textbooks and/or manuals (12.2)” (Table 4.12).

**Table 4.12: Major Barriers to Effective Implementation of Extension Curricula (N = 424\*)**

Major barriers	f (%)	Percent of cases
Budget to support practical learning experience	279 (20.6)	78.4%
Quality faculty to teach extension courses	222 (16.4)	62.4%
Student motivation in practical extension work	208 (15.3)	58.4%

Teacher motivation to teach required process skills and competencies	205 (15.1)	57.6%
Classroom and demonstration facilities	187 (13.8)	52.5%
Quality textbooks and/or manuals	165 (12.2)	46.3%
Other	90 (6.6)	25.3%

\* Multiple responses allowed

## 4.2 RESULTS - SRI LANKA

### 4.2.1 DEMOGRAPHICS OF AGRICULTURAL EXTENSION PROFESSIONALS IN SRI LANKA

The results revealed that a majority of Sri Lankan extension professionals (31%) were in the age group of 26-35 years, followed by 46-55 years (30%) and 36-45 years (26%). Of the respondents, 38.1% had master's qualification in agricultural extension and allied subjects, followed by bachelor's (36.3%) and Ph.D. (15%) educational backgrounds. The results revealed an equal distribution of gender and time on the job-- 60% of agricultural extension professionals had less than 10 years of experience. The results on current positions of respondents showed that 55.4% of them were serving under the Ministry of Agriculture, the Department of Agriculture, or Animal Health and Production. About 34.8 percent of the respondents were serving as extension faculty members at universities (Table 4.13).

**Table 4.13: Demographics of Agricultural Extension Professionals in Sri Lanka**

Category	Frequency (%)
<b>(a) Age (N=111)</b>	
<25 years	1 (0.91)
26-35 years	34 (30.6)
36-45 years	29 (26.1)
46-55 years	33 (29.7)
>55 years	14(12.6)
<b>(b) Education background (N=113)</b>	
Associate Degree / Diploma	12 (10.6)
Bachelor's Degree in Agriculture / Allied Subjects	41(36.3)
Master's in Agricultural / Veterinary / Home Science Extension	43 (38.1)
Ph.D. in Agricultural / Veterinary / Home Science Extension	17 (15.0)
<b>(c) Gender (N= 111)</b>	
Male	56 (50.4)
Female	55 (49.5)
<b>(d) Work experience (N=104)</b>	
<10 years	62 (60.0)
11-20 years	30 (29.0)

21-30 years	12 (11.0)
<b>(e) Primary employer (N= 112)</b>	
Ministry of Agriculture / Department of Agriculture/ Animal Health and Production	62(55.4)
NGOs / Private Sector	8(7.0)
Universities	39(34.8)
Others	3 (2.8)

#### 4.2.2 PROGRAM PLANNING SKILLS AND COMPETENCIES

The mean scores of the importance of all seven program planning skills and competencies in Sri Lanka were higher than their corresponding mean scores on how well the UG extension curriculum addresses this competency (Table 4.14).

**Table 4.14: Program Planning Skills and Competencies**

Program Planning Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Familiar with the vision, mission, and goals of extension service.	117	4.44	0.76	2.96	0.85
Knowledgeable about national agricultural development strategies, programs, and policies.	119	4.55	0.70	3.24	0.85
Able to engage stakeholders to conduct needs assessment.	117	4.31	0.73	3.35	0.91
Able to engage stakeholders to prioritize local needs.	112	4.31	0.72	2.79	0.82
Able to acquire resources to address priority needs.	114	4.38	0.75	3.13	1.96
Able to engage local development partners, such as NGOs, women's groups, and cooperatives, in extension program.	114	4.16	0.84	2.94	0.92
Familiar with government administrative and financial rules and regulations.	116	4.18	0.79	2.85	1.05

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.2.3 PROGRAM IMPLEMENTATION SKILLS AND COMPETENCIES

The mean scores on “How important is this skill or competency?” for all seven program implementation skills and competencies were higher than their corresponding mean scores on “How well does our UG extension curriculum address this competency?” in Sri Lanka (Table 4.15).

**Table 4.15: Program Implementation Skills and Competencies**

Program Implementation Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Coordinate extension programs and activities within district and sub-district levels.	116	4.47	0.68	3.03	0.91
Demonstrate teamwork skills to achieve extension results.	117	4.61	0.56	3.32	0.91
Engage local stakeholders in implementing extension program activities.	116	4.35	0.64	2.96	0.84
Demonstrate negotiation skills to reach consensus and resolve conflicts.	114	4.25	0.76	2.75	0.85
Follow participatory decision-making model in extension work.	115	4.44	0.66	3.03	1.03
Delegate responsibilities to staff as needed.	115	4.21	0.77	2.98	0.97
Be able to engage women farmers and members of minority groups in extension works.	117	4.21	0.87	2.96	1.00

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.2.4 COMMUNICATION AND PUBLIC RELATIONS SKILLS AND COMPETENCIES

The mean scores on the importance of all six communication and public relations skills and competencies in Sri Lanka were higher than their corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.16).

**Table 4.16: Communication and Public Relations Skills and Competencies**

Communication and Public Relations Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Respect local culture while communicating with clients.	113	4.46	0.66	3.36	0.96
Prepare monthly, quarterly, and annual progress reports of their extension works.	112	4.34	0.73	2.98	1.00
Share success stories and lessons learned with stakeholders through various media.	113	4.34	0.75	2.91	0.92

Use various communication channels to disseminate information about important extension activities and programs (e.g., farmers' field day, disease and pest epidemics).	112	4.71	0.56	3.41	0.99
Possess good listening skills and listen to all clients and stakeholders.	111	4.51	0.59	3.14	0.88
Demonstrate good public speaking skills.	112	4.58	0.59	3.34	0.94

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.2.5 ICTS SKILLS AND COMPETENCIES

The mean scores of the importance of all seven ICTs skills and competencies in Sri Lanka were higher than their corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.17).

**Table 4.17: Information and Communication Technologies (ICTs) Skills and Competencies**

ICTs Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Microsoft Excel for data entry and data analysis.	112	4.16	0.82	3.85	0.88
Microsoft Word for word processing (e.g., typing, editing, printing) and designing graphics.	112	4.29	0.72	3.53	0.96
Microsoft PowerPoint for making presentations.	112	4.40	0.64	3.69	1.01
Audiovisual aids such as charts, graphs, and puppet shows for teaching and learning.	111	4.37	0.63	3.41	0.99
Mass media such as FM radio stations and television channels for communication.	111	4.23	0.69	3.13	1.04
Computers (email, Internet, and webpages) for communication.	109	4.30	0.75	3.52	1.02
Mobile phone services and social media (e.g., Facebook, Twitter, WhatsApp, texting, SMS service) for communication.	111	4.34	0.71	3.33	1.08

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.2.6 PROGRAM EVALUATION SKILLS AND COMPETENCIES

The mean scores on “How Important is this skill or competency?” for all seven program evaluation skills and competencies in Sri Lanka were higher than their corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.18).

**Table 4.18: Program Evaluation Skills and Competencies**

Program Evaluation Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Understand and explain theories and principles of monitoring and evaluation.	111	4.35	0.64	3.10	0.95
Conduct monitoring and evaluation of extension programs.	109	4.49	0.59	3.02	0.86
Develop data collection instruments for monitoring and evaluation of extension works.	112	4.38	0.65	3.05	0.96
Apply qualitative tools and techniques (e.g., focus group discussion, in-depth interview, etc.) to collect evaluation data.	110	4.39	0.71	3.17	0.98
Apply quantitative tools and techniques (e.g., survey, interview, farm data) to collect evaluation data.	106	4.41	0.66	3.19	0.94
Analyze data (qualitative and quantitative), interpret data, and write evaluation report.	110	4.35	0.76	3.23	1.06
Share evaluation reports within their organizations and with stakeholders.	109	4.34	0.75	2.96	1.045

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.2.7 PERSONAL AND PROFESSIONAL DEVELOPMENT SKILLS AND COMPETENCIES

The mean scores on “How important is this skill or competency?” for all five personal and professional development skills and competencies in Sri Lanka were higher than the corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.19).

**Table 4.19: Personal and Professional Development Skills and Competencies**

Personal and Professional Development Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Practice principles of good governance (i.e., participation of clients, accountability to clients, transparency).	110	4.23	0.77	2.80	0.98
Show commitment to career advancement (participate in lifelong learning, in-service training programs, professional meetings and conferences).	111	4.31	0.77	2.92	1.09
Apply professional ethics in works ( i.e., promote research-based recommendation or technology, honesty, and integrity).	111	4.33	0.75	2.90	1.07
Follow organizational policies and directives for in-service training and professional development.	110	4.25	0.79	3.00	0.96
Demonstrate positive attitude toward extension work.	110	4.55	0.67	3.21	1.04

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.2.8 DIVERSITY AND GENDER SKILLS AND COMPETENCIES

The mean scores on the importance of all five diversity and gender skills and competencies in Sri Lanka were higher than their corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.20).

**Table 4.20: Diversity and Gender Skills and Competencies**

Diversity and Gender Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Understand that diversity exists within and among clients and stakeholders.	109	4.27	0.72	3.03	0.89
Identify the needs of women, small farmers, and minority groups.	111	4.37	0.76	3.05	0.94

Develop extension programs to benefit women farmers.	111	4.32	0.73	2.94	1.01
Engage various social and marginalized groups in extension programs.	110	4.33	0.72	2.93	0.98
Do teamwork with diverse staffs at district and sub-district levels.	109	4.36	0.67	3.08	0.98

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.2.9 TECHNICAL SUBJECT MATTER EXPERTISE/SKILLS AND COMPETENCIES

The mean scores on “How important is this skill or competency?” for all six technical subject matter expertise/skills and competencies in Sri Lanka were higher than the corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.21).

**Table 4.21: Technical Subject Matter Expertise/Skills and Competencies**

Technical Subject Matter Expertise /Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Demonstrate that they have basic knowledge in their discipline (e.g., field crops, horticultural crops, livestock, IPM, fishery, etc.).	111	4.55	0.63	3.60	0.92
Understand the new technology being promoted -- what it is, why, and how it works.	111	4.46	0.69	3.29	0.95
Be able to educate community members about different types of risks and uncertainties (due to climate change, market fluctuations, natural disasters, etc.).	109	4.37	0.68	3.06	0.95
Refer to and make use of publications --journals, research reports, etc.	110	4.23	0.77	2.95	1.06
Demonstrate basic knowledge of agribusiness management.	110	4.23	0.64	3.13	1.02
Facilitate entrepreneurship development among extension clientele.	109	4.33	0.69	3.07	1.05

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.2.10 SUMMARY OF PROCESS SKILLS AND CORE COMPETENCIES AMONG AGRICULTURAL EXTENSION PROFESSIONALS IN SRI LANKA

The mean scores on the level of importance of all eight process skills and core competencies were higher than the corresponding mean scores on their level of coverage in UG courses (Table 4.22).

**Table 4.22: Summary of Process Skills and Core Competencies among Agricultural Extension Professionals in Sri Lanka (N = 109)**

Extension process skills and competencies	Level of importance	Level of coverage in UG courses	Mean diff. (SD)
	Mean (SD)	Mean (SD)	
Program planning	4.34 (0.52)	3.05 (0.86)	1.29 (1.01)
Program implementation	4.38 (0.46)	3.01 (0.73)	1.37 (0.85)
Communication and public relations	4.50 (0.40)	3.21 (0.69)	1.29 (0.77)
Information and communication technology (ICTs)	4.30 (0.56)	3.48 (1.10)	0.82 (1.08)
Program evaluation	4.38 (0.54)	3.09 (0.84)	1.30 (0.90)
Personal and professional development	4.33 (0.60)	2.96 (0.87)	1.37 (0.97)
Diversity and gender skills	4.32 (0.59)	3.01 (0.82)	1.32 (0.84)
Technical subject matter expertise	4.37 (0.53)	3.19 (0.83)	1.18 (0.86)

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.2.11 APPROPRIATE WAYS TO ACQUIRE THE CORE COMPETENCIES

The appropriate ways to acquire core competencies were measured on a four-point Likert scale: not appropriate, somewhat appropriate, appropriate, and very appropriate, with scores of 1,2,3, and 4, respectively. The range of mean values is 3.07 to 3.49 for all the five methods, indicating that these five methods are considered appropriate to very appropriate to acquire the skills and competencies (Table 4.23).

**Table 4.23: Appropriate Ways to Acquire the Core Competencies**

Appropriate ways to acquire core competencies	N	Mean	SD
Using revised or updated UG curricula.	112	3.07	0.77
Requiring internship at various work environments (i.e., public institutions, NGOs, private companies, etc.) during the bachelor's degree (UG) programs.	114	3.29	0.67
Through basic induction training (job orientation training at the beginning of job).	114	3.38	0.64
Through in-service training (training offered during the employment period).	113	3.49	0.60
Through opportunities to attend trainings, seminars, workshops, webinars, etc.	112	3.44	0.67

#### 4.2.12 MAJOR BARRIERS TO EFFECTIVE IMPLEMENTATION OF EXTENSION CURRICULA

The major barriers to effective implementation of extension curriculum include “Budget to support practical learning experience”, which was perceived by 23.93% of respondents, followed by “Student motivation in practical extension work” (20.25%), “Quality faculty to teach extension courses” (14.72%), “Classroom and demonstration facilities,” (13.50%), “Quality textbooks and/or manuals,” (11.66%), and “Teacher motivation to teach required process skills and competencies” (11.66%) (Table 4.24).

**Table 4.24: Major Barriers to Effective Implementation of Extension Curricula (N = 119)**

Major Barriers	F	Percentage
Budget to support practical learning experience	39	32.8
Student motivation in practical extension work	33	20.25
Quality faculty to teach extension courses	24	14.72
Classroom and demonstration facilities	22	13.50
Quality textbooks and/or manuals	19	11.66
Teacher motivation to teach required process skills and competencies	19	11.66
Other	7	4.29

### 4.3 RESULTS - NEPAL

#### 4.3.1 DEMOGRAPHICS OF AGRICULTURAL EXTENSION PROFESSIONALS

The age of 27% of respondent agricultural extension professionals in Nepal was more than 55 years, followed by 36-45 years (25%) and 46-55 years (22%). Over half (56.3%) of the respondents had master’s level qualification in agricultural extension and allied subjects, followed by Ph.D. (24.1%) and bachelor’s degree (6.9%) in agriculture and allied subjects. The results revealed that 91% of respondent agricultural extension professionals were male, and 35% had less than 10 years of experience. The results on current positions of respondents showed that nearly half of them (49.4%) were serving under the Ministry of Agriculture, Department of Agriculture, or Department of Livestock Services. About 18.3% of the respondents were serving as extension professionals in NGOs or the private sector (Table 4.25).

**Table 4.25: Demographics of Agricultural Extension Professionals in Nepal**

Category	Frequency (%)
<b>(a) Age (N=81)</b>	
<25 years	4 (5.0)
26-35 years	17 (21.0)
36-45 years	20 (25.0)
46-55 years	18 (22.0)
>55 years	22 (27.0)
<b>(b) Education Background (N=74 )</b>	
Associate degree /diploma	4 (4.6)
Bachelor’s degree in agriculture / allied subjects	6 (6.9)
Master’s degree in agricultural / veterinary extension	45 (56.3)
Ph.D. in agricultural / veterinary / home science extension	19 (24.1)

<b>(c) Gender (N=81)</b>	
Male	73(91.0)
Female	8(9.0)
<b>(d) Work Experience (N=79)</b>	
<10 years	28 (35.0)
11-20 years	18 (23.0)
21-30 years	23 (29.0)
>30 years	10 (13.0)
<b>(e) Primary Employer (N=74)</b>	
Department of Agriculture/Department of Livestock Services	39 (49.4)
NGOs / private sector	15 (18.3)
Agriculture and Forestry University	7(8.0)
Tribhuvan University	6(6.9)
Others	7(9.2)

#### 4.3.2 PROGRAM PLANNING SKILLS AND COMPETENCIES

The mean scores of the importance of all seven program planning skills and competencies were higher than the corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.26).

**Table 4.26: Program Planning Skills and Competencies**

Program Planning Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Familiar with the vision, mission, and goals of extension service.	85	4.49	0.67	3.01	0.85
Knowledgeable about national agricultural development strategies, programs, and policies.	84	4.44	0.73	2.79	0.93
Able to engage stakeholders to conduct needs assessment.	84	4.31	0.64	2.85	0.88
Able to engage stakeholders to prioritize local needs.	84	4.44	0.66	2.83	0.94
Able to acquire resources to address priority needs.	83	4.29	0.74	2.71	0.93
Able to engage local development partners, such as NGOs, women’s groups, and cooperatives, in extension program.	84	4.32	0.84	2.85	1.05

Familiar with government administrative and financial rules and regulations.	83	4.22	0.86	2.40	0.99
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*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

### 4.3.3 PROGRAM IMPLEMENTATION SKILLS AND COMPETENCIES

The mean scores on “How important is this skill or competency?” for all seven program implementation skills and competencies were higher than the corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.27).

**Table 4.27: Program Implementation Skills and Competencies**

Program Implementation Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Coordinate extension programs and activities within district and sub-district levels.	85	4.35	0.65	2.60	0.88
Demonstrate teamwork skills to achieve extension results.	85	4.35	0.70	2.64	0.92
Engage local stakeholders in implementing extension program activities.	85	4.41	0.69	2.56	0.85
Demonstrate negotiation skills to reach consensus and resolve conflicts.	84	4.10	0.74	2.44	0.91
Follow participatory decision-making model in extension work.	84	4.51	0.67	2.90	0.87
Delegate responsibilities to staff as needed.	83	4.24	0.64	2.47	0.93
Be able to engage women farmers and members of minority groups in extension works.	83	4.40	0.62	2.82	0.98

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

### 4.3.4 COMMUNICATION AND PUBLIC RELATIONS SKILLS AND COMPETENCIES

The mean scores of the importance of all six communication and public relations skills and competencies were higher than the corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.28).

**Table 4.28: Communication and Public Relations Skills and Competencies**

Communication and Public Relations Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Respect local culture while communicating with clients.	84	4.48	0.65	2.99	0.91
Prepare monthly, quarterly, and annual progress reports of their extension works.	84	4.49	0.63	2.60	1.05
Share success stories and lessons learned with stakeholders through various media.	83	4.22	0.61	2.69	0.87
Use various communication channels to disseminate information about important extension activities and programs (e.g., farmers' field day, disease and pest epidemics).	83	4.57	0.57	3.24	0.89
Possess good listening skills and listen to all clients and stakeholders.	85	4.45	0.65	2.81	0.93
Demonstrate good public speaking skills.	82	4.33	0.69	2.57	0.99

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.3.5 ICTs SKILLS AND COMPETENCIES

The mean scores of the importance of all seven ICTs skills and competencies were higher than the corresponding mean scores on how well the UG extension curriculum addresses each competency (Table 4.29).

**Table 4.29: Information and Communication Technologies (ICTs) Skills and Competencies**

Information and Communication Technologies Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Microsoft Excel for data entry and data analysis.	85	4.39	0.67	2.71	1.07
Microsoft Word for word processing (e.g., typing, editing, printing) and designing graphics.	85	4.44	0.61	2.79	1.04

Microsoft PowerPoint for making presentations.	83	4.46	0.61	2.94	1.03
Audiovisual aids such as charts, graphs, and puppet shows for teaching and learning.	84	4.44	0.61	3.11	0.91
Mass media such as FM radio stations and television channels for communication.	83	4.40	0.68	2.77	0.97
Computers (email, Internet, and webpages) for communication.	82	4.56	0.55	2.85	1.01
Mobile phone services and social media (e.g., Facebook, Twitter, WhatsApp, texting, SMS service) for communication.	84	4.44	0.66	2.77	1.15

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.3.6 PROGRAM EVALUATION SKILLS AND COMPETENCIES

The mean scores on “How important is this skill or competency?” for all seven program evaluation skills and competencies were higher than the corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.30).

**Table 4.30: Program Evaluation Skills and Competencies**

Program Evaluation Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Understand and explain theories and principles of monitoring and evaluation.	83	4.34	0.72	3.19	0.90
Conduct monitoring and evaluation of extension programs.	84	4.48	0.67	2.89	0.89
Develop data collection instruments for monitoring and evaluation of extension works.	82	4.43	0.61	2.87	0.94
Apply qualitative tools and techniques (e.g., focus group discussion, in-depth interview, etc.) to collect evaluation data.	83	4.36	0.71	2.82	0.83

Apply quantitative tools and techniques (e.g., survey, interview, farm data) to collect evaluation data.	82	4.33	0.72	3.13	0.89
Analyze data (qualitative and quantitative), interpret data, and write evaluation report.	83	4.42	0.73	2.78	0.95
Share evaluation reports within their organizations and with stakeholders.	83	4.34	0.75	2.70	1.09

Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.

#### 4.3.7 PERSONAL AND PROFESSIONAL DEVELOPMENT SKILLS AND COMPETENCIES

The mean scores on the importance of all five personal and professional development skills and competencies were higher than the corresponding mean scores on "How well does our UG extension curriculum address this competency?" (Table 4.31).

**Table 4.31: Personal and Professional Development Skills and Competencies**

Personal and Professional Development Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Practice principles of good governance (i.e., participation of clients, accountability to clients, transparency).	84	4.38	0.73	2.52	0.87
Show commitment to career advancement (participate in lifelong learning, in-service training programs, professional meetings and conferences).	84	4.23	0.73	2.49	0.89
Apply professional ethics in works (promote research-based recommendation or technology, honesty, and integrity).	84	4.52	0.74	2.46	1.06
Follow organizational policies and directives for in-service training and professional development.	81	4.41	0.68	2.52	1.00
Demonstrate positive attitude toward extension work.	83	4.58	0.65	2.71	1.05

Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.

#### 4.3.8 DIVERSITY AND GENDER SKILLS AND COMPETENCIES

The mean scores on “How important is this skill or competency?” for all five diversity and gender skills and competencies were higher than the corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.32).

**Table 4.32: Diversity and Gender Skills and Competencies**

Diversity and Gender Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Understand that diversity exists within and among clients and stakeholders.	83	4.30	0.66	2.82	0.95
Identify the needs of women, small farmers, and minority groups.	82	4.55	0.63	2.90	1.04
Develop extension programs to benefit women farmers.	82	4.40	0.56	2.68	0.94
Engage various social and marginalized groups in extension programs.	83	4.55	0.55	2.77	1.05
Do teamwork with diverse staffs at district and sub-district levels.	83	4.40	0.62	2.59	0.92

Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.

#### 4.3.9 TECHNICAL SUBJECT MATTER EXPERTISE/SKILLS AND COMPETENCIES

The mean scores on “How important is this skill or competency?” for all six technical subject matter expertise/skills and competencies were higher than the corresponding mean scores on “How well does our UG extension curriculum address this competency?” (Table 4.33).

**Table 4.33: Technical Subject Matter Expertise/Skills and Competencies**

Technical Subject Matter Expertise /Skills and Competencies	N	How important is this skill or competency?		How well does our UG extension curriculum address this competency?	
		Mean	SD	Mean	SD
Demonstrate that they have basic knowledge in their discipline (e.g., field crops, horticultural crops, livestock, IPM, fishery, etc.).	83	4.51	0.67	3.23	0.91

Understand the new technology being promoted -- what it is, why and how it works.	83	4.51	0.63	2.77	0.88
Be able to educate community members about different types of risks and uncertainties (due to climate change, market fluctuations, natural disasters, etc.).	83	4.29	0.65	2.64	0.97
Refer to and make use of publications-- journals, research reports, etc.	82	4.23	0.67	2.70	0.95
Demonstrate basic knowledge of agribusiness management.	83	4.25	0.76	2.61	0.96
Facilitate entrepreneurship development among extension clientele.	82	4.39	0.68	2.60	1.06

*Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.*

#### 4.3.10 SUMMARY OF PROCESS SKILLS AND CORE COMPETENCIES AMONG AGRICULTURAL EXTENSION PROFESSIONALS IN NEPAL

The mean scores on the level of importance of all eight sets of process skills and core competencies of agricultural extension professionals in Nepal were higher than their corresponding mean scores on their level of coverage in UG courses (Table 4.34).

**Table 4.34: Summary of Process Skills and Core Competencies among Agricultural Extension Professionals in Nepal (N = 81)**

Process Skills and Core Competencies	Level of importance	Level of coverage in UG courses	Mean diff. (SD)
	Mean (SD)	Mean (SD)	
Program development	4.36 (0.47)	2.75 (0.59)	1.61 (0.74)
Program implementation	4.34 (0.47)	2.62 (0.68)	1.72 (0.80)
Communication and public relations	4.41 (0.43)	2.79 (0.67)	1.62 (0.73)
Information and communication technology (ICTs)	4.46 (0.49)	2.84 (0.81)	1.61 (0.96)
Program evaluation	4.39 (0.55)	2.91 (0.70)	1.48 (0.88)
Personal and professional development	4.44 (0.54)	2.51 (0.83)	1.93 (0.96)
Diversity and gender skills	4.44 (0.44)	2.74 (0.84)	1.71 (0.90)
Technical subject matter expertise	4.36 (0.51)	2.75 (0.79)	1.61 (0.87)

Note: Scale for importance: 1 = Not important, 2 = Somewhat important, 3 = Average, 4 = Important, 5 = Essential. Scale for coverage in UG courses: 1 = Not at all covered, 2 = Minimally covered, 3 = Moderately well covered, 4 = Very well covered, 5 = Extremely well covered.

#### 4.3.11 APPROPRIATE WAYS TO ACQUIRE THE CORE COMPETENCIES

The appropriate ways to acquire core competencies were measured on a four-point Likert scale: not appropriate, somewhat appropriate, appropriate, and very appropriate, with scores of 1,2,3, and 4, respectively. The range of mean values was 3.26 to 3.45 for all five ways, indicating that these five ways are appropriate to very appropriate ways to acquire the skills and competencies (Table 4.35).

**Table 4.35: Appropriate Ways to Acquire the Core Competencies**

Appropriate Ways	N	Mean	SD
Using revised or updated UG curricula.	82	3.34	0.63
Requiring internship at various work environments (i.e., public institutions, NGOs, private companies, etc.) during the bachelor's degree (UG) programs.	82	3.45	0.67
Through basic induction training (job orientation training at the beginning of job).	81	3.33	0.69
Through in-service training (training offered during the employment period).	81	3.31	0.66
Through opportunities to attend trainings, seminars, workshops, webinars, etc.	82	3.26	0.72

#### 4.3.12 MAJOR BARRIERS TO EFFECTIVE IMPLEMENTATION OF EXTENSION CURRICULA

The major barriers to effective implementation of extension curricula include “Budget to support practical learning experience”, which was perceived by 18.6 per cent of respondents, followed by “Quality faculty to teach extension courses” (18.3%), “Teacher motivation to teach required process skills and competencies” (17.8%), “Student motivation in practical extension work” (14.3%), “Classroom and demonstration facilities” (13.5%), and “Quality textbooks and/or manuals” (11.7%) (Table 4.36).

**Table 4.36: Major Barriers to Effective Implementation of Extension Curricula (N = 85)**

Barriers to effective implementation	Responses		Percent of Cases
	F	Percent	
Budget to support practical learning experience	65	18.6%	79.3%
Quality faculty to teach extension courses	64	18.3%	78.0%
Teacher motivation to teach required process skills and competencies	62	17.8%	75.6%
Student motivation in practical extension work	50	14.3%	61.0%
Classroom and demonstration facilities	47	13.5%	57.3%
Quality textbooks and/or manuals	41	11.7%	50.0%
Other	20	5.7%	24.4%

#### 4.4 RESULTS – FOCUS GROUP DISCUSSIONS

The major findings of the FGDs conducted in India and Sri Lanka are briefly summarized under the following headings:

- General perceptions of community about agricultural extension.
- One activity that extension service is doing particularly well.

- Major recommendations to improve agricultural extension services.
- Critical job skills / core competencies required of agricultural extension workers.
- Coverage of job skills / core competencies in UG curriculum.
- Barriers to effectively train UG students with required competencies.
- Suggestions on how to overcome the barriers.
- Broad modifications in agricultural extension curriculum's transaction.

#### 4.4.1 GENERAL PERCEPTIONS OF COMMUNITY ABOUT AGRICULTURAL EXTENSION

The results of FGDs revealed that agricultural development professionals hold varied perceptions of agricultural extension. For some, extension is advisory work, an information provider, and a problem solver, whereas it is perceived by some civic leaders as community development work. Various perspectives on agricultural extension are summarized in Box 4.1.

<b>Box 4.1: General Perceptions of Community about Agricultural Extension</b>	
<ul style="list-style-type: none"> <li>• Advisory work</li> <li>• Change the knowledge, opinion, skills, and aspirations (KOSA)</li> <li>• Communication intervention</li> <li>• Community development</li> <li>• Developmental intervention</li> <li>• Diverse and valuable service</li> <li>• Education process</li> <li>• Facilitate agricultural development</li> <li>• Field-level professional activity</li> <li>• Help in decision making</li> <li>• Helps in capacity building</li> <li>• Helps in program planning, implementation, and evaluation</li> <li>• Helps in situation analysis</li> <li>• Identify farming problems and needs</li> <li>• Improve farm, home, and community</li> </ul>	<ul style="list-style-type: none"> <li>• Improve knowledge through education</li> <li>• Information provider</li> <li>• Input provider</li> <li>• Link between farmer and researcher</li> <li>• Lowest in hierarchy but broad-based in usage</li> <li>• Marketing information provider</li> <li>• Multi-institutional and multi-sectoral pluralistic system</li> <li>• Played a significant role in the green revolution</li> <li>• Provide guidance in farming</li> <li>• Teach farmers to solve problems themselves</li> <li>• Transfer of knowledge</li> <li>• Transfer of technology</li> </ul>

#### 4.4.2 ONE ACTIVITY THAT EXTENSION SERVICE IS DOING PARTICULARLY WELL

The results of FGDs on one thing that extension service is doing particularly well in agriculture are summarized in Box 4.2.

<b>Box 4.2: One Activity That Extension Service is Doing Particularly Well</b>	
<ul style="list-style-type: none"> <li>• Advisory services</li> <li>• Agripreneurship development</li> <li>• Commodity-specific private extension models</li> <li>• Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>• Extension teaching</li> <li>• Farmers' field schools</li> <li>• Farmers' organizations</li> <li>• Farmers' training and capacity building</li> <li>• Field extension</li> </ul>

<ul style="list-style-type: none"> <li>• e-extension and information delivery through ICTs</li> <li>• Extension curriculum development</li> <li>• Extension management and administration</li> <li>• Extension program development</li> <li>• Extension program evaluation</li> <li>• Extension research</li> </ul>	<ul style="list-style-type: none"> <li>• Inputs provision</li> <li>• Knowledge dissemination</li> <li>• Mobile extension</li> <li>• On-farm trials</li> <li>• Technology commercialization</li> <li>• Third-sector extension like SHGs and Farmers Information Groups</li> </ul>
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#### 4.4.3 MAJOR RECOMMENDATIONS TO IMPROVE AGRICULTURAL EXTENSION SERVICES

The results of FGDs on one major recommendation to improve agricultural extension services and program delivery are summarized in Box 4.3.

<b>Box 4.3: Major Recommendations to Improve Agricultural Extension Services</b>	
<ul style="list-style-type: none"> <li>• Improve EASs in livestock sector, coarse cereals, and non-plantation crops, which are neglected.</li> <li>• Inform or update extension staff members regularly of the latest research information through continuing education efforts such as in-service trainings, opportunities to participate in conferences, seminars, workshops, etc.</li> <li>• Minimize reorganization of extension services at frequent intervals.</li> <li>• Address gender gap regarding technology information.</li> <li>• Improve coordination, partnerships, and bring convergence between extension organizations that are working in isolation.</li> <li>• Improve coordination between research and extension.</li> <li>• Improve location specificity in information delivery.</li> <li>• Update the training materials.</li> <li>• Recruit more extension workers to maintain direct contact with farmers.</li> <li>• Introduce extension programs for youth development.</li> <li>• Extension planning should be at national level with coordination at local level.</li> <li>• Provide more resources to conduct field demonstrations.</li> <li>• Improve communication and teaching skills among field-level extension officers.</li> </ul>	<ul style="list-style-type: none"> <li>• Avoid multipurpose duties assigned to extension workers, who are overburdened with implementing state and central schemes.</li> <li>• Extension to focus on most prevailing problems.</li> <li>• Provide conceptual clarity on what “Agricultural Extension” is among service providers.</li> <li>• Strengthen extension systems in allied sectors.</li> <li>• Improve technical knowledge and skills of extension staff members.</li> <li>• Improve commitment and make extension staff visit farms on more frequent intervals.</li> <li>• Make information flow more need-driven than supply-driven.</li> <li>• Strengthen public sector extension and improve farmers’ access to extension functionaries.</li> <li>• Provide adequate funding for field extension activities and training.</li> <li>• Improve feedback channels between farmers, extension, and research labs.</li> <li>• Expand private extension activities, which are limited to few crops and resource-rich areas with focus on profits.</li> <li>• Private extension to focus more on social capital building by working with resource- poor farmers also.</li> <li>• Attract CSR funding, and encourage more third-sector extension activities.</li> </ul>

#### 4.4.4 CRITICAL JOB SKILLS / CORE COMPETENCIES REQUIRED OF AGRICULTURAL EXTENSION WORKERS

The results of FGDs on the critical job skills or core competencies required of agricultural extension workers in the changing agricultural and rural development context are summarized in Box 4.4.

<b>Box 4.4: Critical Job Skills / Core Competencies Required of Agricultural Extension Workers</b>	
<p><b>(a) Program Planning</b></p> <ul style="list-style-type: none"> <li>• Extension administration</li> <li>• Facilitation skills</li> <li>• Needs assessment</li> <li>• Participatory methods</li> <li>• Priority-setting methods</li> <li>• Stakeholders analysis</li> </ul> <p><b>(b) Program Implementation</b></p> <ul style="list-style-type: none"> <li>• Coordination</li> <li>• Teamwork</li> <li>• Stakeholders' engagement in program implementation</li> <li>• Negotiation skills</li> <li>• Conflict resolution</li> <li>• Task delegation</li> <li>• Engage disadvantaged groups</li> </ul> <p><b>(c) Communication and Interpersonal</b></p> <ul style="list-style-type: none"> <li>• Stakeholders communication</li> <li>• Cultural compatibility</li> <li>• Progress reports preparation</li> <li>• Share success stories and lessons learned</li> <li>• Media engagement – mass media and social media</li> <li>• Listening skills</li> <li>• Public speaking skills</li> <li>• Word processing skill</li> <li>• Power Point preparation and presentation skills</li> <li>• Preparation and use of audiovisual aids</li> </ul>	<p><b>(d) Program Evaluation</b></p> <ul style="list-style-type: none"> <li>• Program appraisal skills</li> <li>• Program monitoring skills</li> <li>• Program evaluation skills</li> <li>• Develop data collection instruments</li> <li>• Apply qualitative tools and techniques</li> <li>• Apply quantitative tools and techniques</li> <li>• Data entry, analysis, and interpretation skills</li> <li>• Write evaluation reports</li> <li>• Share evaluation reports</li> </ul> <p><b>(e) Personal and Professional Development</b></p> <ul style="list-style-type: none"> <li>• Practice principles of good governance</li> <li>• Participate in in-service trainings, workshops, and conferences</li> <li>• Apply professional ethics in work</li> <li>• Positive attitude toward extension work</li> <li>• Engage diverse stakeholders in extension work -- disadvantaged, women, and minorities.</li> </ul> <p><b>(f) Technical Subject Matter Expertise</b></p> <ul style="list-style-type: none"> <li>• Essential knowledge in the relevant basic discipline</li> <li>• Comprehend the new technology being promoted</li> <li>• Disaster management</li> <li>• Marketing, agribusiness and entrepreneurship development</li> </ul>

#### 4.4.5 COVERAGE OF JOB SKILLS / CORE COMPETENCIES IN UG CURRICULUM

The responses to the FGD question on coverage of job skills and core competencies in the UG curriculum are summarized as:

- Yes, but theoretically covered.
- Partially covered.
- Inadequate hands-on training.
- Not much covered.

#### 4.4.6 BARRIERS TO EFFECTIVELY TRAIN UG STUDENTS IN REQUIRED CORE COMPETENCIES

The barriers to effectively train UG students with required core competencies are summarized in Box 4.5.

##### **Box 4.5: Barriers to Effectively Train UG Students in Required Core Competencies**

- More theoretical coverage of curriculum with limited practical application.
- Inadequate conveyance availability to go to villages / farms for practical learning experience.
- Time constraints to conduct practical applications and less exposure to farms/farmers.
- Inadequate credit hours assigned to extension and communication courses in UG curricula.
- Engagement of stakeholders is lacking as per the spirit of the curricula transaction.
- Very few skilled teachers who can brand the subject and create interest among the students.
- Vacant faculty positions and high student: faculty ratio.
- Low commitment and professionalism by extension faculty.
- Extension class schedules are also framed like any other course with one-hour theory class and 2.5-hour practical classes to fit into the regular timetable.
- Insufficient time to cover the subject in its true perspective.
- Practical applicability and relevance of subject to field situation is missing.
- Extension discipline and extension courses not being perceived as essential and/or important by administration.
- Though curriculum is updated periodically, contents are mostly outdated.
- Lack of international perspective in curriculum.
- Non-availability of good textbooks.
- Handling of extension courses by non-extensionists.
- Interference of the non-extension authorities in extension.
- Less favorable attitude of students toward the subject as job opportunities specific to the core competencies are inadequate.
- Lack of understanding on extension and its linkages with other subjects, resulting in mismatch between what is taught and what is required at the field level.
- Extension is considered a thankless job because it does not provide sufficient living income to field professionals.
- Absence of proper reward and disciplinary policies.
- Research and publication orientation is lacking.
- Young minds are not involved in curriculum modification meetings.
- Mindset of seniors and lack of motivation to young teachers to innovate.

#### 4.4.7 SUGGESTIONS TO OVERCOME THE BARRIERS

The main suggestions on how to overcome the barriers and effectively develop required core competencies among UG students are summarized in Box 4.6.

##### **Box 4.6: Suggestions to Overcome the Barriers**

- Organizational and budgetary support to extension departments for imparting hands-on learning-by-doing experiences.
- Involving students in projects and working with farmers in the field should be part of the curriculum.
- Developing strong exposure with villages and farmers for real-time classroom learning.
- Recruit faculty to achieve and maintain recommended students: faculty ratio.
- Selection of good, skillful faculty members from diverse regions and with diverse experience.
- Recognize faculty members for their work related to innovations in UG teaching and curriculum transaction.
- Give adequate importance to extension and make it part of a multidisciplinary curriculum.
- Attitude of extension faculty should change, and they should learn from changes happening in other social sciences.
- Field-level exposure to identify farmers' problems and potential solutions.
- Guest faculty engagement and inclusion of field functionaries in extension practical training.
- Refresher training to teachers at national and international levels.
- Specialized faculty for specialized courses.
- All extension scientists should be mandated to work some time at KVKs.

#### 4.4.8 BROAD MODIFICATIONS SUGGESTED IN AGRICULTURAL EXTENSION CURRICULUM AND ITS TRANSACTION

The broad changes in agricultural extension curriculum recommended by the focus group participants are summarized in Box 4.7.

##### **Box 4.7: Broad Modifications Suggested in the Agricultural Extension Curriculum and Its Transaction**

- Curriculum revision at UG, PG, and Ph.D. levels to be undertaken simultaneously.
- Market-led extension, agribusiness management, and export farming to be given more focus in curriculum.
- Curriculum should support transition of traditional field extension methods to digital extension methods.
- Periodic review of curriculum through discussion among faculty members.
- Lifelong learning through e-learning and open and distance learning.
- A 15- to 30-day village stay program with teacher and farmer supervision will provide hands-on learning opportunity to students.
- Addition of more courses and credits in agricultural extension.
- All practical classes should provide for learning-by-doing experience by attaching students with line department officials in organizing and evaluating extension programs for the end users.
- Arrange for virtual classroom exposures, especially with topmost institutes around the world.
- Student exchange programs between universities for cross-learning.
- Assigning project work in all extension courses and encourage students to prepare good case studies.
- Attach students and teachers with farmer producer organizations and farmers' training programs.

- Involve experienced farmers in conducting some classes to help students understand the practical difficulties in accepting and adopting technology so that students would get firsthand knowledge on difficulties in technology transfer and adoption.
- Cover a variety of successful extension models / best practices.
- Village camps -- dedicate one day per week to village visit with night stay and participate in all activities of the village.
- Interdisciplinary curriculum and training in other branches of social sciences, such as educational and social psychology, participatory methods, rural sociology, etc.
- Gender sensitization.
- Interaction of UG students with real-time extension workers from public, private, and third sectors (NGOs/CBOs) on a monthly basis.
- Mandatory engagement with farmers (clients) during the course period/training.
- Introducing some research component in UG course curriculum on farming problems.
- Value education, work, and moral ethics for extension workers.
- Students to organize one complete extension program as a group activity during their UG tenure.
- Simulation modeling for field practicum.

## 4.5 DISCUSSION

The aim of the study was to measure the perceptions of extension professionals in India, Sri Lanka, and Nepal on gaps in process skills and competencies in the UG agricultural extension curriculum, with the key questions on:

- Demographics of agricultural extension professionals.
- Eight process skills and core competencies: How important is the skill or competency? How well does the UG extension curriculum address this competency?
- Appropriate ways to acquire core competencies and major barriers to effective implementation of the extension curriculum.

Accordingly, the results are briefly discussed under the following headings:

### 4.5.1 DEMOGRAPHICS OF AGRICULTURAL EXTENSION PROFESSIONALS

The key stakeholders of the UG curriculum are the directors of extension, extension department heads, extension faculty members, extension researchers, subject matter specialists working in farm science centers and KVKs, government extension field functionaries working in agriculture and allied sectors, employers and extension graduates working for NGOs and/or private sector companies, and extension PG and Ph.D. students. In the present study, these key stakeholders constitute about 90 percent of the total respondents in India, Sri Lanka, and Nepal.

In general, extension services are provided by men extension professionals for men clients, despite key roles that women play in agriculture, livestock, and other allied activities (Matthewman and Ashley, 1996; Matthewman et al., 1997). The results of the study showed that only 33% and 9% of respondent extension professionals in India and Nepal, respectively, were women, whereas in Sri Lanka, the numbers of men and women extension professionals were about equal. To bridge this gender gap within extension in India and Nepal, there is need to encourage more undergraduate women students to take up extension specialization at the master's and Ph.D. levels. Also, employing more women extension professionals in teaching, research, and field positions, planning gender-specific extension programs, and delivering extension advisory services (EASs) to meet the needs of women farmers would help bridge the gender gap.

## 4.5.2 PROCESS SKILLS AND CORE COMPETENCIES

In India, the UG agriculture, fisheries, and home science curriculum is governed by ICAR through its dean's committee recommendations uniformly for the entire country. Currently the fifth dean's committee regulations are being implemented (ICAR, 2017). The UG curriculum in veterinary science and animal husbandry is governed by Veterinary Council of India regulations (VCI, 2016). In Sri Lanka and Nepal, no identical UG agriculture curriculum is applicable to the entire country. The agriculture faculties in the various universities formulate their own curricula in Sri Lanka and Nepal. The agricultural curriculum development processes in India, Sri Lanka, and Nepal are summarized in Box 4.8.

### **Box 4.8: Agricultural Curriculum Development Processes**

#### **India (Dean's Committee of ICAR)**

- The ICAR appoints dean's committees periodically to bring about necessary reforms for quality assurance in agricultural education.
- The dean's committees, in consultations with all stakeholders by adopting a bottom-up approach, make recommendations on updating academic norms, standards, curricula, course contents, nomenclature, reforms in admission and examination, pedagogy, faculty requirements, governance, minimum standards for establishing a new college, etc.
- Inputs from stakeholders are obtained at various levels. The dean's committee first deliberates on the skills that graduates must possess and then works backward to design course curricula. The committee identifies conveners/co-conveners to get inputs from the deans of all the colleges, who forward inputs based on the suggestions received from their faculties and students. The suggestions received for all the disciplines are reviewed and finalized by the dean's committee. To meet region-specific needs and opportunities, several topical optional courses are also prescribed.
- Currently the fifth dean's committee recommendations on agricultural extension curricula and course contents are being followed, which are uniform to all agricultural colleges across India.

#### **Sri Lanka (Sabaragamuwa University of Sri Lanka [SUSL])**

- Curriculum revisions are conducted once in every five years in the Faculty of Agricultural Sciences, SUSL.
- A curriculum development committee (CDC) is made up of faculty members --including the dean, department heads, all professors, and subject-specific faculty members -- and external representatives (from the private/public sectors) in relevant fields.
- From time to time, the CDC meets and discusses the faculty requirements according to the graduate profile of the faculty, current trends, job market, etc., and conducts periodic need analyses.
- The CDC decides on the courses, their contents, and credit hours based on the graduate profile for the faculty.
- On the basis of needs, the CDC collectively develops a proposal of curriculum revision and submits it to the University Grants Commission (UGC) for approval.
- Once the UGC approval is granted for the proposal, the process continues.
- The final course curriculum document is submitted to the University Senate and the Faculty Council for approval.

#### **Nepal (Agriculture and Forestry University & Institute of Agriculture and Animal Science, Tribhuvan University)**

- The curriculum is a dynamic process, and courses and/or the curriculum is revised/updated periodically.
- A subject committee (SC) chaired by the head of the department is formed for each academic discipline. All the faculty members of the particular departments and other professionals in the

same discipline who represent various employment agencies are members of the subject committee.

- The SC reviews the curriculum on the basis of professional judgments and employer needs.
- The revised curriculum is presented to the Faculty Board chaired by the dean. The Faculty Board consists of all the department heads as well as a few other external subject experts.
- The recommendations of the SC on the curriculum revision are submitted to the Faculty Board for review and recommendation to the Academic Council for final approval.
- In Tribhuvan University, the rector chairs the Academic Council. In the Agriculture and Forestry University, the Vice Chancellor chairs the Academic Council. All faculty deans, department heads, research directors, and a few other external experts make up the Academic Council.
- After approval by the Academic Council, the new or revised curriculum recommended by the Faculty Board is then implemented by the respective faculties.

The broad credit structures for UG extension curriculum in India, Sri Lanka, and Nepal are summarized in Tables 4.37 to 4.40.

**Table 4.37: Prescribed Agricultural Extension Courses at the UG Level in India**

<b>Department of Agricultural Extension and Communication</b>	<b>Credits</b>
Fundamentals of agricultural extension education	3(2+1)
Rural sociology and educational psychology	2(2+0)
Entrepreneurship development and business communication	2(1+1)
Communication skills and personality development	2(1+1)
<b>Total credits</b>	<b>9(6+3)</b>

(Source: ICAR, 2017; Sulaiman et al., 2018)

**Table 4.38: Prescribed Agricultural Extension Courses at the UG Level at Sabaragamuwa University of Sri Lanka**

<b>Department of Agribusiness Management</b>	<b>Credits</b>
<b>Core Program: 1<sup>st</sup> and 2<sup>nd</sup> Years</b>	
Sri Lankan studies and current affairs	0
World studies and current affairs	0
Agricultural extension	2
<b>Honors in Agribusiness Management: 3<sup>rd</sup> and 4<sup>th</sup> Years</b>	
Business communication	3
Marketing communication (elective subject)	2
Practical communication skills (elective subject)	3
<b>Total credits</b>	<b>10</b>

(Source: Agribusiness Management, Sabaragamuwa University, Sri Lanka)

**Table 4.39: Prescribed Agricultural Extension Courses at the UG Level in Nepal**

Department of Agricultural Extension and Rural Sociology	Credits
Rural sociology	3(2+1)
Fundamentals of agricultural extension	3(2+1)
Agricultural communication	3(2+1)
Social mobilization and community development	3(2+1)
<b>Total credits</b>	<b>12(8+4)</b>

(Source: Agriculture and Forestry University, Nepal)

**Table 4.40: Prescribed Veterinary Extension Courses at the UG Level in Nepal**

Veterinary Extension Courses	Credits
Sociology and principles of veterinary and animal husbandry extension	2(1+1)
Extension techniques in veterinary practices and livestock production	2(1+1)
Social mobilization and community development	3(2+1)
<b>Total credits</b>	<b>7(4+3)</b>

(Source: Agriculture and Forestry University, Nepal)

The specific extension course contents at the UG level in India, Sri Lanka, and Nepal are summarized in Boxes 4.9 to 4.13.

#### **Box 4.9: Agricultural Extension Course Contents at UG Level in India**

(Source: ICAR, 2017 - 5<sup>th</sup> Dean's Committee Report)

**Fundamentals of Agricultural Extension Education:** Education: definition and types; extension education -- meaning, definition, scope, and process; objectives and principles of extension education; extension program planning -- meaning, process, principles, and steps in program development. Extension systems in India: extension efforts in pre-independence era (Sriniketan, Marthandam, Firka Development Scheme, Gurgaon Experiment, etc.) and post-independence era (Etawah Pilot Project, Nilokheri Experiment, etc.); various extension/ agriculture development programs launched by ICAR/ government of India (IADP, IAAP, HYVP, KVK, IVLP, ORP, ND, NATP, NAIP, etc.). New trends in agriculture extension: privatization extension, cyber extension/ e-extension, market-led extension, farmer-led extension, expert systems, etc. Rural development: concept, meaning, definition; various rural development programs launched by govt. of India. Community development -- meaning, definition, concept and principles, philosophy of CD rural leadership: concept and definition, types of leaders in rural context; extension administration -- meaning and concept, principles, and functions. Monitoring and evaluation: concept and definition, monitoring and evaluation of extension programs. Transfer of technology: concept and models, capacity building of extension personnel; extension teaching methods -- meaning, classification, individual, group and mass contact methods, ICT applications in TOT (new and social media), media mix strategies; communication -- meaning and definition; principles and functions of communication, models and barriers to communication. Agriculture journalism; diffusion and adoption of innovation: concept and meaning, process and stages of adoption, adopter categories.

**Entrepreneurship Development and Business Communication:** Concept of entrepreneur, entrepreneurship development, characteristics of entrepreneurs; SWOT analysis and achievement motivation, government

policy and programs, and institutions for entrepreneurship development, impact of economic reforms on agribusiness/ agri-enterprises, entrepreneurial development process; business leadership skills; developing organizational skill (controlling, supervising, problem solving, monitoring, and evaluation), developing managerial skills, business leadership skills (communication, direction and motivation skills), problem-solving skill, supply chain management and total quality management, project planning formulation, and report preparation; financing of enterprise, opportunities for agri-entrepreneurship and rural enterprise.

**Communication Skills and Personality Development:** Communication skills: structural and functional grammar; meaning and process of communication, verbal and nonverbal communication; listening and note taking, writing skills, oral presentation skills; field diary and lab record; indexing, footnote and bibliographic procedures. Reading and comprehension of general and technical articles, precise writing, summarizing, abstracting; individual and group presentations, unplanned presentations, public speaking; group discussion. Organizing seminars and conferences.

#### **Box 4.10: Veterinary and Animal Husbandry Extension Course Contents at UG Level in India**

*(Source: VCI, 2016)*

**Livestock- Based Livelihoods and their Evolution:** History of livestock domestication and their social dimensions. Evolution and relationship between plant agriculture and animal husbandry. Farming and characteristics of farming in India. Classification of farming types and systems. Peasant farming, cooperative farming, collective farming, contract farming, estate farming, organic farming, capitalistic farming, small-scale farming, large-scale farming, intensive farming, extensive farming, and specialized, diversified, mixed, integrated, and dry land farming. Role of animals in the contemporary society.

**Extension Education and Development:** Early extension efforts in India. Types of education: formal, non-formal, and informal education. Extension education: concept, levels, objectives, and dimensions. Principles, philosophy, and functions of extension education. Teaching learning process and steps in extension teaching. Concept of need and its types. Rural development -- concept, significance, and importance of rural development programs for poverty alleviation. Problems and issues in development. Panchayati Raj System.

**Rural Sociology in Veterinary Extension:** Concept of sociology and rural sociology in animal husbandry extension. Culture: definition, elements, change, impact on production systems. Basic sociological concepts --society, community, and association. Rural society: characteristics and differences among society, community, and culture. Characteristics and differences among tribal, rural, and urban communities. Social control: concept and means of social control (techniques, folkways, taboos, mores, and laws). Social stratification: definition, forms and characteristics (caste system and class system). Social institutions in rural society: social, economic, political, religious, and educational (definition, composition, and function). Social change: concept, importance, and factors. Social groups: different groups, classification of social groups, and their characteristics. Leadership: definition, functions of leader, types of rural leaders, key communicators, and their role in animal husbandry extension.

**Transfer of Technology for Livestock Development:** Technology: concept, generation process, application, merits, and de-merits. Adoption and diffusion of innovations, stages of adoption, adopter categories, innovation decision process, attributes of innovations, diffusion process, factors affecting adoption and diffusion processes. Program planning: principles, objectives, and steps. Evaluation of extension program, constraints in the adoption of scientific animal husbandry practices. Role of extension agents in diffusion of livestock innovations. Cattle and buffalo improvement programs: Key Village Scheme, Intensive Cattle

Development Project, *Gosadan* and *Gaushala*. Dairy development programs: concept of cooperation, Rochdale principles of cooperation, objectives of cooperative, AMUL pattern of dairy cooperative system, and Operation Flood. Transfer of technology projects of ICAR: KVK, Agricultural Technology Information Centre (ATIC), Agricultural Technology Management Agency (ATMA), National Agricultural Innovation Project (NAIP), *Rashtriya Krishi Vikas Yojana* (RKVY), etc. Various ongoing central and state government animal husbandry development programs being run related to sheep, goat, poultry, swine, fodder production, etc.

**Communication and Extension Teaching Methods:** Communication and its functions. Basic concepts: communication fidelity, communication gap, time lag in communication, empathy, homophily and heterophily, propaganda, publicity, persuasion, and development communication. Types of communication: intrapersonal, interpersonal, verbal, non-verbal, vertical, horizontal, organizational communication, etc. Elements of communication: communicator, message, channel, treatment of message, audience, and audience response (feedback). Barriers to communication. Individual contact methods: farm and home visit, farmer's call, personal letter, adaptive or minikit trial, farm clinic, etc. Group contact methods: result demonstration, method demonstration, group meeting, training, field day or farmers' day, study tour, etc. Mass contact methods: farm publications (leaflet, folder, pamphlet, booklet, bulletin, farm magazine, newsletter, etc.), mass meeting, campaign, exhibition, newspaper, radio, television, mobile short message service. Selection and use of extension teaching methods.

**Livestock Economics and Marketing:** Introduction to economics and livestock economics: definition and scope (production, consumption, exchange, and distribution). Basic concepts: wants, goods, wealth, utility, price, value, assets, capital, money, income, etc. Important features of land, labor, capital, and organization. Theories of demand, supply, and cost. Theories of production (law of diminishing return, increasing return, constant return, and return to scale). Concept of market: market, market structure, and classification of markets. Market price and normal price, price determination under perfect competition in short and long run. Marketing functions: meaning and their classification (packaging, transportation, grading, standardization, storage and warehousing, processing and value addition, buying and selling, market information, financing, risk bearing, minimization of risks [speculation and hedging]). Marketing agencies, institutions, and channels for livestock and livestock products. Government interventions and role in marketing of livestock and livestock products. External trade in livestock products, recent policies on trade, and international trade agreements and their implications in the livestock sector.

**Livestock Entrepreneurship:** Definition of entrepreneur, entrepreneurship, enterprise, and manager. Difference between entrepreneur and entrepreneurship, entrepreneur and enterprise, entrepreneur and manager. Theories of entrepreneurship: sociological theory, economic theory, cultural theory, psychological theory. Types, characteristics, and functions of an entrepreneur. Forms of entrepreneurship: sole proprietorship, partnership, corporation, cooperative, joint stock company, private and public limited company. Introduction to financial management: concept, function, analysis of financial statement, sources of capital (banks, venture capitals, etc.). Project appraisal: introduction, importance, techno-economic feasibility, criteria of project evaluation (discounted and non-discounted), capital budgeting, etc. Business plan for enterprise. Institutions promoting entrepreneurship in India. Entrepreneurship development programs. Accounting: objectives, common terms. Personnel management: identification of work, job analysis, division of labor, etc. Resource management: organization aspect of livestock farms, resources and procurement of inputs and financial resources, break-even analysis, etc.

**ICT:** Strengths and limitations of ICTs application in livestock sector and capacity building among farmers. Information kiosk, e-learning, CAD, virtual classroom, virtual reality, multimedia, etc. Cyber extension: problems and prospects in livestock extension. Computer networking: LAN, MAN, WAN,

Internet, teleconferencing, teletext, radio-text, video-text, interactive cable distribution system, satellite communication, Internet, www, etc.

**Contemporary Issues in Livestock Enterprises:** Gender and animal husbandry: definition, difference between gender and sex, role of women in animal husbandry, gender sensitization, importance of gender sensitization in animal husbandry, need for gender analysis, gender budgeting, and mainstreaming. Salient features of recent livestock census, livestock insurance scheme, national livestock mission. Sustainability: concept of sustainability of livestock production system (social, environmental, and economic challenges faced). Introduction to environmental consequences of livestock rearing. Animal welfare: introduction to animal welfare, ethics, and rights. Importance of animal welfare in the contemporary society. Expectations from veterinary professionals.

#### **Box 4.11: Fisheries Extension Course Contents at UG Level in India**

*(Source: ICAR, 2017 - 5<sup>th</sup> Dean's Committee Report)*

**Fisheries Extension Education:** Introduction to extension education and fisheries extension: concepts, objectives, and principles; extension education, formal and informal education; history and role of fisheries extension in fisheries development. Fisheries extension methods: individual, group, and mass contact methods and their effectiveness, factors influencing their selection and use; characteristics of technology, transfer of technology process; important TOT programs in fisheries; role of NGOs and SHGs in fisheries; fisheries co-management; adoption and diffusion of innovations, adoption and diffusion process, adopter categories, and barriers in diffusion of fisheries innovations; extension program planning and evaluation -- steps and importance; participatory planning process. Basic concepts in rural sociology and psychology and their relevance in fisheries extension; social change, social control, social problems, and conflicts in fisheries; gender issues in fisheries; theories of learning, learning experience, learning situation.

**Communication Skills and Personality Development:** Structural and functional grammar; meaning and process of communication, verbal and nonverbal communication; listening and note taking, writing skills, oral presentation skills; field diary and lab record; indexing, footnote and bibliographic procedures. Reading and comprehension of general and technical articles, precise writing, summarizing, abstracting; individual and group presentations, impromptu presentation, public speaking; group discussion. Organizing seminars and conferences.

**Information and Communication Technology:** IT and its importance. IT tools, IT-enabled services and their impact on society; computer fundamentals; hardware and software; input and output devices; word and character representation; features of machine language, assembly language, high-level language, and their advantages and disadvantages; principles of programming -- algorithms and flowcharts; operating systems (OS) -- definition, basic concepts, introduction to WINDOWS and LINUX operating systems; local area network (LAN), wide area network(WAN), Internet and World Wide Web, HTML and IP; introduction to MS Office Word, Excel, Power Point. Audiovisual aids -- definition, advantages, classification and choice of AV aids; cone of experience, and criteria for selection and evaluation of AV aids; video conferencing. Communication process, Berlo's model, feedback, and barriers to communication.

**Fisheries Business Management and Entrepreneurship Development:** Concept of entrepreneurship; entrepreneurial and managerial characteristics; managing an enterprise; motivation and entrepreneurship development; importance of planning, monitoring, evaluation, and follow-up; managing competition; entrepreneurship development programs; generation, incubation, and commercialization of ideas and innovations. Government schemes and incentives for promotion of entrepreneurship. Preparation of enterprise budget for integrated fish farming. Fiscal and monetary policies and their impact on

entrepreneurship. Infrastructural and other financial requirements for fishery entrepreneurship. Government policy on small and medium enterprises (SMEs) / SSIs. Venture capital. Contract farming and joint ventures, public-private partnerships. Overview of fisheries inputs industry. Characteristics of Indian fisheries processing and export industry. Introduction to fish business management: concept of management, management process (planning, organizing, staffing, leading, and controlling), organizational behavior, human resource planning, new dimensions in fish business environment and policies. Accounting procedures of fish business entity. Emerging trends in fish production, processing, marketing, and exports. Assessing overall business environment in the Indian economy. Overview of Indian social, political, and economic systems and their decision making by individual entrepreneurs. Globalization and the emerging business /entrepreneurial environment. Social responsibility of business. (Source: 5<sup>th</sup> Deans Committee Report, ICAR).

#### **Box 4.12: Extension Course Contents at UG Level in Sri Lanka**

(Source: [Sabaragamuwa University of Sri Lanka](#))

**Sri Lankan Studies and Current Affairs** : General knowledge and awareness on important issues in global context to motivate the students to evaluate the current situation of these issues and their impacts to Sri Lanka and how to control them.

**Agricultural Extension** : Fundamentals of agricultural extension: introduction, concepts, and definitions of extension; principles of extension; history and emerging perspectives, and relationship between agricultural development and agricultural extension; extension and communication--definitions, purpose, and components of communication process, communication channels, models and problems, ICTs and their role in agricultural extension, audiovisual teaching materials; extension and innovation-- adoption and diffusion of innovation, factors affecting diffusion process, present and future agricultural innovations in Sri Lanka; extension teaching methods; and extension program development.

**Business Communication** : Common communication activities in business organizations; basics of communication-- written and verbal communication methods, types of communications including interpersonal communication, writing business letters and reports, conducting and facing interviews, conducting and participating in meetings, business presentations; communication in modern business environments; and how to prepare curriculum vitae.

**Practical Communication Skills** : Theoretical knowledge in effective speaking, telephone etiquette and techniques, various interviewing types, making effective presentations, conducting effective meetings, reading, writing, and awareness on table etiquette.

#### **UG Extension Courses at University of Peradeniya, Sri Lanka**

(Source: [University of Peradeniya, Sri Lanka](#))

Developmental extension; principles of human behavior; career development; organizational management; socioeconomic aspects of natural resource management; extension education; communication: theory and practice; organizational behavior; information management; rural sociology; human resource management; productivity enhancement training; journalism and media use; social research methods; project development and management; gender issues in development; community development approaches; research project.

#### **Box 4.13: Extension Course Contents at UG Level in Nepal**

(Source: Institute of Agriculture and Animal Science, Tribhuvan University, Nepal)

Rural Sociology: Sociology and rural sociology – differences and similarities in meanings and concepts, contributions to agriculture extension; social institutions, social processes, norms, values, socialization, and deviance; social cultures, customs, and traditions; social structure and social systems, some important sociological theories; social change process, impact, and factors of change; social groups, formation, and behavioral change; social festivals, rituals, and social heritage, and their relationship to social change and development.

Fundamentals of Agricultural Extension: Concepts and meaning of education – types, forms, and their characteristics; learning principles, processes, and methods derived from education and their application to agricultural extension education; historical perspective of agricultural extension, philosophy, principles, characteristics, and scope; extension teaching methods, program areas; agricultural extension general concepts, types, and process of extension programs, their characteristics, and principles; levels of planning and planning approaches and programming cycles; identification of local leadership in extension programming.

Agricultural Communication: Communication – definition, meaning, scope, process, and its functions, feedback process; effects in communication, role of feedback in extension education; forms of communication, communication barriers, and noise in communication channels; models and theories of communication; system concept in communication – type of communication, individual, group, and mass communication system; role of press, radio and television communication approaches, and considerations in programs of the world, Southeast Asia and SAARC; planning for effective communication; role of change agents, development communicator – present trends, issues, and problems; communication approaches in agriculture extension programs of Nepal – their achievements and limitations; role and functions of NGOs and private organizations, agencies involved in communications of agriculture development programs in Nepal.

Social Mobilization and Community Development: Meaning and concepts of development, rural development, community development, and transition in thoughts and application of these concepts; developmental process over the period of time to the current stage in their historical perspectives; rural poverty, causes and consequences, and efforts made in the past and strategies; introductory concepts of and recent experiences in poverty reduction programs through various models and processes of social mobilization and participatory program planning at the grass-roots levels; an overview of gender concepts over time, issues, and strategies in developmental activities, gender-sensitive development planning.

It is clear from Tables 3.37 to 3.40 and Boxes 4.9 to 4.13 that the broad subject matter areas covered under the UG extension curricula in India, Sri Lanka, and Nepal are almost the same with a minor variation. These broad subject matter areas are summarized in Box 4.14.

#### **Box 4.14: Broad Contents under UG Extension Curricula in India, Sri Lanka and Nepal**

- Fundamentals of extension education
- Rural sociology
- Program planning
- Extension teaching methods and audiovisual aids
- Transfer of technology – diffusion and adoption of innovations
- Educational psychology
- Entrepreneurship development
- Communication skills and ICTs
- Management and organizational behavior
- Leadership and personality development
- Social mobilization and community development
- Contemporary issues

The competencies -- program planning, implementation and evaluation; communication and ICTs; personal and professional development; diversity and gender skills, technical subject matter expertise -- have been identified by many researchers as basic extension skills that are needed and useful for any extension professionals at individual level (Cooper and Graham, 2001; Scheer et al., 2006; Sulaiman and Davis, 2012; Davis and Sulaiman, 2014; Davis, 2015; Prasad et al., 2015; CRISP, 2015; Suvedi and Kaplowitz, 2016; Sasidhar and Suvedi, 2016). In the present study, the mean scores on the level of importance of all eight process skills and core competencies of agricultural extension professionals in India, Sri Lanka, and Nepal were significantly higher than the corresponding mean scores on their level of coverage in UG courses..

A perusal of Tables 3.37 to 3.40 and Boxes 4.9 to 4.14 makes it clear that extension process skills and competencies have been covered under various UG agricultural extension courses in India, Sri Lanka, and Nepal. However, the depth of coverage and amount of curriculum transaction seems weak or missing, which is evident from the results of both online survey and FGDs data. Therefore, the core issue of concern is a proper recognition and inclusion of the above eight process skills and competencies in UG extension curricula, among others.

The results revealed that agricultural extension professionals in India, Sri Lanka, and Nepal need to acquire process skills and competencies in extension program planning, implementation, and evaluation. Agricultural extension workers must be able to plan a program meticulously by expanding participation not just in numbers but also with active involvement of various clients. While planning, implementing, and evaluating a program, an extension worker should be familiar with the vision, mission, and goals of extension service; knowledgeable about national agricultural development strategies, programs, and policies; able to engage stakeholders to conduct needs assessment and prioritize local needs; able to acquire resources to address priority needs; able to engage local development partners such as NGOs, women's groups, and cooperatives in extension programs; and be familiar with government administrative and financial rules and regulations.

In general, the farmers had no option but to produce what the consumers demand rather than trying to sell what they produce in the market. But the ignorance of smallholders to produce goods which meet the stringent quality standards of markets, lack of market information, and domination by middlemen make them victims of all types of malpractices in weighing and price fixing. This necessitates the extension professionals to develop their competency not only in "how to produce" but also in "how to market" the agricultural commodities. There must be a shift from technology-driven extension to market-driven extension system. The prerequisite for this shift is that both the farmers and extension service providers must have better access to reliable and up-to-date market information. However, access to market information is necessary but not sufficient for small farmers to effectively operate in markets. Hence, the focus must also be on developing a comprehensive Market-Oriented Advisory Services (MOASs) by the public sector extension system.

Effective extension professionals are able to coordinate extension programs and activities within district and sub-district levels, demonstrate teamwork skills to achieve extension results, engage local stakeholders in implementing extension program activities, demonstrate negotiation skills to reach consensus and resolve conflicts, follow a participatory decision-making model in extension work, delegate responsibilities to other staff members as needed, and be able to engage women farmers and members of minority groups in extension works. An agricultural extension professional has to be aware of the programs launched in his/her area and evaluate their success to avoid repeating mistakes and learn what did work.

Every agricultural extension professional should possess essential evaluation competencies -- understand and be able to explain theories and principles of monitoring and evaluation, conduct monitoring and evaluation of extension programs, develop data collection instruments for monitoring and evaluation of extension works, apply qualitative tools and techniques (e.g., FGD, in-depth interview, etc.) to collect evaluation data, apply quantitative tools and techniques (e.g., survey, interview, farm data) to collect evaluation data, analyze data

(qualitative and quantitative), interpret data, write evaluation reports, and share evaluation reports within their organizations and with stakeholders.

The results revealed that agricultural extension professionals in India, Sri Lanka, and Nepal need to acquire more communication and ICT-related competencies to perform their tasks effectively. Extension workers have to be good communicators so that they are able to persuade farmers to change their methods of farming and adopt innovative practices or technologies. Every agricultural extension professional should respect local culture while communicating with clients; be able to prepare monthly, quarterly, and annual progress reports of their extension work; share success stories and lessons learned with stakeholders through various media; use various communication channels to disseminate information about important extension activities and programs (e.g., farmers' field day, disease and pest epidemics); possess good listening skills and listen to all clients and stakeholders; and demonstrate good public speaking skills.

The results revealed that agricultural extension professionals in India, Sri Lanka, and Nepal need to acquire more personal and professional development competencies. It is the responsibility of their employers to provide opportunities through organizing refresher training programs to enable extension professionals to acquire these important core competencies. The extension professionals must keep themselves abreast of principles of good governance accountability to clients and transparency, show commitment to career advancement (participate in lifelong learning, in-service training programs, professional meetings and conferences), apply professional ethics in their work -- promote research-based recommendations or technology, practice honesty and integrity; follow organizational policies and directives for in-service training and professional development; and demonstrate a positive attitude toward extension work.

The results revealed that agricultural extension professionals in India, Sri Lanka, and Nepal need to acquire more diversity and gender skills and competencies. A perusal of Boxes 4.12 and 4.13 revealed good coverage of gender concepts in the UG agricultural extension curriculum of Sri Lanka and Nepal. Gender concepts have been covered in India's veterinary and fisheries UG extension curriculum (Boxes 4.10 and 4.11) but are missing in the agricultural extension curriculum (Box 4.9). The 5th Dean's Committee of ICAR appreciated that agriculture is getting increasingly feminized and welcomed the enhanced enrolment of women in various agricultural courses in India. It also stressed gender-sensitive agricultural education and curricula that must inform the gender issues, goals, and perspectives in agriculture (ICAR, 2017). The 6th Dean's Committee may consider inclusion and transaction of gender sensitivity concepts, gender analysis, and gender budgeting, etc., in India's UG agricultural extension curriculum.

The results on competencies related to technical subject matter expertise revealed that agricultural extension professionals need more preservice training as part of the UG curriculum and in-service trainings to improve these competencies.

#### 4.5.3 APPROPRIATE WAYS TO ACQUIRE CORE COMPETENCIES AND MAJOR BARRIERS TO EFFECTIVE IMPLEMENTATION OF EXTENSION CURRICULUM

The results indicated that all the methods to acquire process skills and competencies -- i.e., pre-service training by revising or updating the UG curricula, internship/industrial training at various work environments (i.e., public institutions, NGOs, private companies, etc.) during the UG program, basic induction training (e.g., job orientation training at the beginning of job), in-service training (training offered during the employment period), and opportunities to attend trainings, seminars, workshops, webinars, etc., are appropriate methods and could be employed to enhance the skills and core competencies of agricultural extension professionals.

Agricultural extension professionals are expected to acquire core skills and competencies through preservice training. The UG course structure in India, Sri Lanka, and Nepal covered most of the core competencies assessed in this study (Table 3.37 to 3.40 and Boxes 4.9 to 4.14). While formulating the curriculum, the minimum competencies have to be defined so that these outcomes can be assessed during examinations. Providing

agricultural students, extension faculty members, and the extension profession with explicit statements on the day-one competencies required enables all stakeholders to work toward the common goal of ensuring that these skills are delivered through the preservice training (Davis, 2015).

In India, Sri Lanka, and Nepal, refresher or in-service training is the main and in most cases the only form of capacity development. Though several agencies are involved in in-service training of extension workers, most of their focus has been on technical issues such as crop production, plant protection, and animal health management that too is offered in class room setting. Although the central and state departments of agriculture and allied sectors have regional training centers in each state to impart induction and in-service training, their focus is also on improving technical subject matter competencies, not extension competencies. In India to some extent, the, MANAGE, NAARM, Extension Education Institutes (EEIs) and State Agricultural Management and Extension Training Institutes (SAMETI) are imparting in-service training to improve extension competencies. However, innovative instructional techniques with hands-on learning to add rigor to these training programs is essential. The capacities of the trainers must be improved by providing effective in-service educational opportunities.

The major barriers to effective implementation of extension curricula in India, Sri Lanka, and Nepal include budget to support practical learning experience, quality faculty to teach extension courses, student motivation in practical extension work, teacher motivation to teach required process skills and competencies, classroom and demonstration facilities, and quality textbooks and/or manuals.

Human resources are the most important factor in a nation's development. Well-equipped and skilled people will contribute to the individual, organizational, and national development of a country through improved performance (Osman-Gani and Liang-Tang, 1998). A nation's development is not sustainable unless it is supported by a well-trained workforce of its own people. This is equally true for agricultural extension. Extension cannot sustain itself unless it has technically and professionally competent people from the grassroots to the national leadership level. The competencies of the faculty, field functionaries, FPOs, NGOs, other stakeholders need to be improved greatly to address the challenges of agricultural extension.

## CHAPTER 5 – CONCLUSIONS AND IMPLICATIONS FOR POLICY

To strengthen the agricultural extension curriculum in South Asia, the study assessed process skills and competency gaps in undergraduate agricultural extension curricula in India, Sri Lanka, and Nepal with the following research questions:

- a. How effective are extension programs in addressing the needs of food and agricultural systems?
- b. What are the critical job skills and core competencies required of extension workers to effectively plan, implement, and evaluate extension work in today's changing context?
- c. Does the current UG curriculum in agricultural extension include education and/or training on these job skills or core competencies?
- d. What are the barriers to effectively train extension workers with required core competencies, and how can these barriers be removed?

In spite of high enrolment of women in agricultural colleges and universities, study results showed a very low representation of women among extension professionals in India and Nepal. It is important that the colleges and universities attract and retain more women in the agricultural extension discipline. It is also imperative that agricultural extension systems recruit female professionals to help reach underserved audiences (Hill et al., 2010). *To bridge this gender gap, especially in India and Nepal, the authors recommend systematically recruiting and supporting more women students to take up the extension specialization at the postgraduate and doctoral levels. Another recommendation is to recruit more women extension professionals in teaching, research, and field positions, which will help in bridging the gender gap, planning gender-specific extension programs, and delivering EASs to meet the needs of women clients.*

The findings revealed considerable gap differences between the level of importance and the level of coverage in UG courses in all the eight process skills and core competencies of agricultural extension professionals in all the three countries studied-- i.e., program planning, implementation, and evaluation; communication and public relations; ICTs; personal and professional development; diversity and gender skills; and technical subject matter expertise. Further analysis of existing curricula revealed that many of these skills and competencies are included in various UG agricultural extension courses in India, Sri Lanka, and Nepal. *This leads to the conclusion that, though the above skills and competencies are incorporated in the curriculum, the content is minimally covered, and the level of required curriculum transaction and preservice training at the UG level is inadequate.*

To provide integrated support services efficiently to their clients, agricultural extension professionals need to have or acquire the above skills and competencies in letter and spirit. *The results point to the conclusion that agricultural extension professionals are fully aware of the importance of these job skills or competencies required to perform their extension jobs effectively. They are also fully aware that the present curriculum insufficiently addresses these skills and competencies.* Therefore, the core issue of concern is recognition that the implementation of the curriculum is weak and does not prepare students with the required skills and competencies for quality extension work. The analysis also informs us that capacity of the faculty needs improvement, and the course content should specify the skills or competencies to be achieved, suggest pedagogy for facilitating process skills development, and support practical training and fieldwork. *Therefore, we recommend that the agricultural universities in South Asia focus on enhancing the curriculum transaction process.*

The 5<sup>th</sup> Dean's Committee of ICAR, India welcomed the enhanced enrolment of women in various agricultural courses in India and also stressed that gender-sensitive agricultural education and curricula must prepare extension workers to address the gender issues in agriculture. Curriculum analysis revealed, however, that gender concepts are completely missing from the UG agricultural extension curriculum of India, although they

are included in the veterinary and fisheries UG extension curriculum of India and the UG agricultural extension curricula of Sri Lanka and Nepal.

It is estimated that globally only 15 percent of extension agents are women, and male extension agents frequently target male-dominated farmers' groups and focus information and inputs on their needs (World Bank/FAO/IFAD, 2009). The FAO report *Women in Agriculture* (FAO, 2011) observed that the "gender gap" hinders the productivity of women and reduces their contributions to the agriculture sector and to the achievement of broader economic and social development goals. Hence, it is argued that reducing gender inequalities in access to productive resources and services could produce an increase in yields on women's farms of between 20 and 30 percent, which could raise agricultural output in developing countries by 2.5 to 4 percent. *The resulting recommendation is that the next Dean's Committee of ICAR consider inclusion and transaction of gender sensitivity concepts, gender analysis, and gender budgeting in India's UG agricultural extension curriculum.*

The results on competencies related to technical subject matter expertise revealed that agricultural extension professionals receive adequate education in crop and livestock production disciplines such as field crops, horticultural crops, and livestock but lack adequate preparation about various types of risks and uncertainties due to climate change, market fluctuations, and natural disasters. There is also lack of basic knowledge of agribusiness management.

The analysis also reveals that the UG curriculum in India introduces concepts and principles of entrepreneurship development, which are less prominent in Nepal and Sri Lanka. Gender and ethnicity issues are well covered in the Nepalese curriculum but are lacking in the curricula of India and Sri Lanka. Similarly, Sri Lanka has very well integrated agribusiness management concepts and principles in the agricultural extension specialization, but they are lacking in India and Nepal. Academic departments offering UG programs in agricultural extension are named accordingly. In India, most departments are named "agricultural extension", but some are "agricultural extension and rural sociology" or "agricultural communication". In Sri Lanka, extension is an area of specialization within the agribusiness department. Nepal offers the program under the Department of Agricultural Extension and Rural Sociology. *The findings of FGDs and analysis of existing UG extension curricula point to the conclusion that India, Sri Lanka, and Nepal are still continuing to teach the traditional broad course contents adopted in the 1960s from U.S. and U.K. universities.* Though some of those contents are relevant to some extent in the field of agricultural extension, curriculum reforms are important to address new challenges. The proponents of new curricula in agricultural extension must realise and recognise the changing nature of agriculture, inability of the public sector extension system in effectively addressing the differential service needs of the smallholder families and emergence of demand-led and market-oriented advisory systems as the drivers for these changes. *In view of all these findings, we recommend transforming the terminology and course contents of UG extension curricula with a focus on modernizing extension and advisory services (Tables 5.1 & 5.2).*

Most universities are maintaining separate departments of agricultural extension and offering UG and PG degrees in extension, though disciplinary boundaries have been weakening recently. Some universities have merged agricultural extension with agricultural economics. For example, in TNAU of India, agricultural extension, economics, and rural management departments are integrated as the Centre for Agricultural and Rural Development Studies. In Sabaragamuwa University of Sri Lanka, agricultural extension courses are part of agribusiness management. In Nepal, extension courses are offered under the Department of Agricultural Extension and Rural Sociology. The foundational concepts and principles of extension education come from diverse social science disciplines such as adult education, rural sociology, development communication, economics, psychology, anthropology, management, and development studies. Agricultural extension curricula of the new century could be enhanced through the integration of various social science courses and faculties.

The results on major barriers to effective implementation of extension curricula in India, Sri Lanka, and Nepal revealed major similarities in budgetary constraints, infrastructure, quality of extension faculty and textbooks, etc. The departments of Extension in almost all the colleges and universities have been receiving the lowest budget compared with other departments. The worst scenario noticed in many of the private agricultural colleges in India is single-man departments headed by an assistant professor offering the Extension courses badly impacting on the quality of teaching.

*To address these barriers and improve agricultural extension training in South Asia, we recommend that colleges and universities provide budgetary support for extension practical teaching-learning experiences, recruit quality faculty members qualified to teach required extension courses, provide opportunities for the faculty to teach required process skills and competencies, provide good classroom and demonstration facilities, and make available quality textbooks and/or manuals.*

The results indicated that methods such as preservice training, internship at various work environments, basic induction training, in-service training, and continuing education opportunities are appropriate methods and could be employed to enhance the skills and core competencies of agricultural extension professionals. Agricultural extension professionals are expected to acquire core skills and competencies through preservice training. *We recommend that colleges and universities define the minimum day-one competencies expected of graduates while reformulating and/or revising their curricula so that they can be assessed during the preservice training. These competencies can be contextualized through basic induction training and further refined through staff development or in-service training and continuing education opportunities.*

Today, around 55,000 agricultural students graduate with four-year degrees every year in South Asia (India, Sri Lanka, and Nepal). These graduates populate agricultural teaching, research, and extension organizations. *The results of the FGDs point to the conclusion that agricultural colleges and universities are facing the following quality dilemma:*

- First, the student population has changed -- very few come from rural agricultural backgrounds, many have little or no interest in hands-on agriculture, and thus they tend not to farm after graduation.
- Second, agricultural colleges and universities are divesting themselves of courses that provide students with hands-on technical and vocational skills. As a result, the graduates have few practical skills useful in farming.
- Third, there has been no support for curricular revitalization. The physical infrastructure is growing old, and funds are lacking to repair or replace equipment. Faculty members lack motivation to change.
- Fourth, and most important, the faculty recognition and reward system does not support extension or outreach on par with research or teaching.

Extension or outreach faculty should be required to promote scholarship of extension by maintaining close working relationships with farmers, agribusiness operators, and field extension professionals to offer hands-on training to UG students. *To promote the scholarship of extension, colleges and universities are recommended to adopt a separate track for extension/outreach faculty similar to the teaching track suggested by the National Research Council (2009).*

The 5th Dean's Committee of India (ICAR, 2017) partly attributed the unsatisfactory state of the food and agriculture system and agrarian economy to the decline in the quality of agricultural education -- i.e., erosion of basic sciences from agricultural curricula, excessive use of their own graduates as teaching and research faculty (also called inbreeding), serious skill gaps (poor exposure to the outside world), and poor employability of agriculture graduates. Bridging these gaps must be a high national priority.

## 5.1 IMPLICATIONS FOR POLICY

To strengthen the agricultural extension curriculum in India, Sri Lanka, and Nepal, we propose the following strategies:

- Improve preservice education at agricultural colleges and universities.
- Strengthen agricultural extension as a field of study.
- Improve in-service training and professional development.
- Build capacity of university extension faculties.
- Revitalize the agricultural extension curriculum.
- Improve Preservice Education at Agricultural Colleges and Universities

### 5.1.1 IMPROVE PRE-SERVICE EDUCATION AT AGRICULTURAL COLLEGES AND UNIVERSITIES

Agricultural education is an integral part of capacity building for agricultural knowledge management. Agricultural colleges have played a significant role in meeting the food and nutrition needs of the growing population. Developing technical and professional core competencies among agricultural extension professionals is fundamental to improving extension effectiveness. Preservice training programs, such as UG and PG programs at colleges and universities, must incorporate courses to address these competencies. A requirement for hands-on learning – such as living and working with several stakeholders of agriculture including farmers, agribusiness operators, or NGOs through fieldwork or internships -- has become essential. Employers look for graduates with relevant internship experience. India’s semester-long Rural Agricultural Work Experience Programme in the fourth year for UG agriculture students is an outstanding part of the existing curriculum and should continue.

Curriculum development is a dynamic process. More specifically, it is time to examine curricula with the following questions:

- What types of work will graduates be doing upon graduation?
- Does the UG curriculum address the core competencies needed for a demand-driven, decentralized, pluralistic extension service? (For example, are students required to take courses in program planning and evaluation, instructional strategies for adult learning, ICTs, leadership development, and working with local leaders?)
- Do fieldwork, internships, and practicums offer adequate hands-on service learning activities and practical education?

As the APLU (2009) stated, “Service learning combines traditional instruction with community service to provide a more complete educational experience for students. It has evolved rapidly in recent years as a relevant pedagogical approach. The extension system is ideally positioned to help identify these community-based opportunities” (p. 9). Internships have proven to be a very effective way to offer hands-on and employment-focused learning experience (National Research Council, 1997). Universities could require students to have at least one mentored internship experience within their industry or field of study.

### 5.1.2 STRENGTHEN AGRICULTURAL EXTENSION AS A FIELD OF STUDY

Most countries have established colleges of agriculture, and most of them offer undergraduate and graduate degrees in agricultural and extension education. In the United States, agricultural teacher preparation and extension educator preparation are two tracks offered by the agricultural education programs. About two-thirds of these programs (65%) offer graduate degrees. The enrolments in both agricultural teacher education and extension education dropped in recent years. As a result, many universities have merged their

agricultural and extension education departments with other closely related departments or programs. In India, Sri Lanka, and Nepal, on the other hand, enrolment numbers in extension education departments have been steady. However, the results of the FGDs revealed issues with the quality of educational and instructional delivery -- i.e., instruction has been hierarchical, test-based, instructor-driven, and passive-knowledge-transfer.

In general, agricultural and extension education needs major improvements. The instructional delivery system needs to be transformed into a hands-on, internship-based, team-based, experiential, and learner-centered approach. The faculty has the onerous responsibility of preparing the future extension professionals to address the challenges they will be facing in view of the global changes that are taking place in agricultural extension. For instance the extension professionals need to develop their competency not only in how to produce but also in how to market the agricultural commodities. There must be a shift from technology driven extension to a market driven extension system.

Although the 5th Dean's Committee report of ICAR had emphasized these concepts, implementation is hampered by budgetary constraints. In addition, colleges and universities need to ensure that the students gain proper understanding of multicultural issues and can communicate effectively with clients or customers, agribusiness managers and marketers, and policymakers. Educational institutions also need to ensure that they promote ethics, interpersonal skills, entrepreneurial skills, teamwork skills, and leadership skills among students. *To address these issues, universities in India, Sri Lanka, and Nepal may need to revise curricula and graduation requirements. Students should be encouraged to become problem solvers through immersion in the world of work through internships and pedagogical innovation in college teaching and learning.*

Agricultural universities should improve the quality of the workforce for agricultural and rural development by restructuring the curriculum from a narrow production agriculture focus to include broader issues facing our society today, such as women and agriculture, food safety and marketing, nutrition, and the environment, including climate change, water and land use issues. The quality of human resources in a nation depends on the quality of higher education—its faculty, curricula, research, and outreach programs. So, investment in agricultural development must consider investment in capacity building of all those stakeholders involved in agriculture and rural development. Academic programs are the building blocks for human capacity building. Investments in strengthening these infrastructures lead to sustainable, effective knowledge management.

*It is essential to strengthen the agricultural extension discipline -- i.e., the teaching, research, and outreach of agricultural colleges and universities -- and make the investments needed to upgrade faculty capacity, make curricular revisions, implement hands-on and learner-centered pedagogy, recruit and retain females in the profession, and keep the curricula dynamic.*

### 5.1.3 IMPROVE IN-SERVICE TRAINING AND PROFESSIONAL DEVELOPMENT

Most agricultural extension and rural advisory services have some form of staff training or professional development department. In recent years, however, most governments or donor agencies have given little attention to strengthening and improving in-service training of extension staff members. Agricultural training centers are poorly staffed and underutilized. These units should be charged to develop training in both technical skills and core competencies for the national extension service. The staff members in the agricultural training centers should conduct competency assessments on major areas identified above and determine areas of need for staff training on the basis of these assessments. In-service trainings can be carried out in person or online. Experts can be invited to develop or update training and resource materials. These educational materials can be made available online or disseminated through electronic media.

To reinforce the importance of core competencies to extension employees and to the organization, a campaign mentality is needed. The necessary and important aspects of a core competency campaign are:

- (a) A clear and visible organizational message from the national/state leadership -- e.g., director and other key administrators.
- (b) A well-articulated plan for fully implementing the core competency system and integrating it with employment, evaluation, and professional development systems.
- (c) A dynamic system that meets differing needs within the organization.

#### 5.1.4 CAPACITY BUILDING OF UNIVERSITY EXTENSION FACULTY

The ICAR (in India), in consultation with state agricultural universities, would review and update the agricultural extension faculty training curriculum. The ministries of agriculture development (in Nepal and Sri Lanka) would invite their subject committees to review and update extension faculty training curricula. The membership of the committee could include staff members from DOA/DLS, state agricultural universities, and agricultural industries. Working as a team, the subject committees could determine the nature and types of extension faculty development strategies on the basis of available human resources (e.g., lecturers and experts) and physical facilities (training halls, dorms, training aids, laboratory facilities, farms for various commodities, etc.), and recommend specific course content for extension faculty training. It will also recommend an accreditation system to attain and sustain the quality of extension faculty training. Once in effect, the accreditation procedure will help ensure a uniform curriculum and consistency in learning outcomes attained by the trainees. The subcommittee could also recommend the training of trainers (ToTs) for KVK-based extension faculty members. It should be noted that extension faculty members in many universities/training institutions are poorly trained in extension, and upgrading their knowledge and skills is an urgent need. *A resource book could be developed to provide extension faculty members with a guide to teaching their curriculum.* The resource book would cover all process skills and competencies and be made available online. Institutions such as MANAGE, NAARM, and the Centre for Advanced Studies in Agricultural Extension, etc., in India, Sri Lanka, and Nepal could take on this new responsibility.

*We recognize that university-based extension faculty members would also need refresher courses on planning, implementation, and evaluation of decentralized, demand-driven, and pluralistic extension services. Each country's ministry of agriculture and the ICAR need a comprehensive human resources development strategy to meet the emerging training needs of extension faculty members.*

The ICAR (in India) and DOA/DLS in Nepal and Sri Lanka, with recommendations from the subject curriculum committee, could develop and update an inventory of extension training experts and subject-matter areas of trainings they will offer. In case there are no or inadequate in-country experts for the modules, the ICAR will train select staff members at universities/colleges within the region and mobilize those trained experts as the resource persons in future trainings. Alternatively, when feasible, ICAR/DOA/DLS could invite international experts to provide training of trainers to its educators.

#### 5.1.5 CURRICULUM REVITALIZATION - SUGGESTED UG AGRICULTURAL EXTENSION CURRICULUM

The roles and responsibilities of agricultural extension workers are changing. Extension services are gradually becoming decentralized, demand-driven, and participatory, and following a pluralistic service delivery model. With decentralized planning coming into practice, extension services have changed from being top-down to becoming increasingly led by community demand. Farmer organizations or grower associations have increased participation in extension programming, and the private sector has become a strong partner to provide inputs supply and marketing services. This scenario explains the changing role of the extension worker and the greater need to focus on building pluralism in extension service. In this context, preservice education and training of UG agriculture students should prepare them to perform the following roles and functions:

- They must be able to practice participatory, demand-driven extension programs for local communities. They should be able to serve as educators, communicators, community organizers, and facilitators of change.
- They should function as networkers and a link between agricultural researchers, policymakers, farm service providers, and farming communities.
- They can organize farm producers into groups and associations for linking farmers to markets, identifying opportunities, and conducting market analyses.
- They promote gender equality and engage various marginalized groups in extension programs.
- They serve as local change agents to address emerging issues such as adaptation to climate change, promotion of renewable energy, gender integration in development programs, and attracting youth to farming as a vocation.

To perform the above responsibilities, extension workers must understand and apply adult learning principles; sociological constructs such as gender, caste, and ethnicity; group dynamics; leadership development; and ICT tools/communication strategies. They must understand the meaning of development and have good planning and organization skills, working knowledge of the main elements of the local agricultural system, and sound knowledge of technical subject matter as well as process skills to teach the new knowledge to farmers and agribusiness operators.

*On the basis of the study findings and after a careful review of existing UG extension curricula in India, Sri Lanka, and Nepal, we propose three UG courses of three semester credits each to be offered during the first three years of the curriculum. We recommend to the next ICAR Dean's Committee of India and the Agricultural Extension Subject Matter Committees of Sri Lanka and Nepal to consider and adopt these courses (Tables 5.1 and 5.2).*

**Table 5.1: Summary of Proposed UG Level Courses in Agricultural Extension**

Course Title	Credits (T+P)
1. Foundations of Agricultural Extension	2+1
2. Managing Agricultural Extension Programs	2+1
3. Agribusiness and Supply Chain Management	2+1
<b>Total (9 credits)</b>	<b>6+3</b>

The authors further developed the contents to be covered under the proposed courses into 13 blocks, 117 theory units, and 71 application/practical units along with relevant references. (Table 5.2).

**Table 5.2: Contents of Proposed UG Level Courses in Agricultural Extension**

Course 1: Foundations of Agricultural Extension (2+1)	
Blocks	Units
<b>Block 1: Agricultural Extension</b>	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. Concept of extension: philosophy, process, and principles.</li> <li>2. Historical development of agricultural extension.</li> <li>3. Contemporary extension approaches and models.</li> <li>4. Organization and funding of extension services.</li> <li>5. Issues facing agricultural extension.</li> <li>6. Competencies of extension professionals.</li> </ol>

	<p><b>Application/Practical:</b></p> <ol style="list-style-type: none"> <li>1. Prepare a historical timeline of agricultural extension education and extension services.</li> <li>2. Visit a local extension service center or provincial department of agriculture office and learn organogram of services provided, funding, and issues facing extension services(group exercise).</li> <li>3. Visit farmers’ groups and/or commercial farmers to explore what extension service providers are serving them, identify major issues, and suggest solutions to improve extension services to the users(group exercise).</li> </ol>
<p><b>Block 2: Sociology of Agriculture</b></p>	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. Rural sociology: meaning and importance.</li> <li>2. Social values and cultural norms, attitudes, and perceptions.</li> <li>3. Rural-urban continuum, feeding growing urban population.</li> <li>4. Basic social processes including accommodation, adjustment, amalgamation, assimilation, cooperation, consensus, competition, conflict, and integration.</li> <li>5. Conflict: stages, conflict intensity continuum, conflict management.</li> <li>6. Introduction to gender: concepts of sex and gender, gender stereotypes, gender roles.</li> <li>7. Women in development approach, gender and development approach.</li> <li>8. Social construction of gender: socialization process and gender stereotyping, institutions and systems that reinforce gender stereotyping.</li> <li>9. Gender mainstreaming: definition, principles, reasons for mainstreaming gender, challenges to mainstreaming, mainstreaming gender in the project cycle.</li> <li>10. Caste and ethnic groups: current status and challenges.</li> <li>11. Social stratification and gender, gender based discrimination, caste and ethnicity.</li> <li>12. Social stratification: meaning, bases (class, caste, age, gender), views on stratification.</li> <li>13. Rural social institutions: concept and functions; social institutions: household, family and its types, marriage system; economic institutions: farming, fishing, hunting, and exchange labor; educational institutions; political institutions; government; and religious institutions.</li> <li>14. Farmer associations and cooperatives: management structures, roles and responsibilities, individual members’ roles, roles of clubs, roles of the board, the manager, and the government.</li> <li>15. Book keeping for associations/cooperatives: introduction to accounting, users of accounting information, accounting equation, accounting cycle, original documents, books of original entry, ledger, trial balance, financial statements, profit and loss statement, balance sheet, accounting concepts, double-entry system of accounts.</li> <li>16. Gender integration in management of associations and cooperatives: gender terminologies, social construction of gender, gender analysis, recommendations to improve women’s participation.</li> </ol>

	<p><b>Applications/Practical:</b></p> <ol style="list-style-type: none"> <li>1. Visit a rural community to identify social institutions/groups with which the farmers are associated.</li> <li>2. Visit a village to learn about and list the taboos, folkways, rituals, and social values in the village.</li> <li>3. Prepare an interview schedule to study the social characteristics of rural society – pattern of settlement, culture, sex roles, social stratification, social values, social control, customs, social interaction process, social change, and social problems (group exercise).</li> <li>4. Identify important value systems in the rural setting as a means of social control.</li> </ol>
<b>Block 3: Development</b>	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. Concepts of development, modernization, and social change.</li> <li>2. Major theories of development.</li> <li>3. Common indicators of development.</li> <li>4. Sustainable development: good practice principles.</li> <li>5. Citizen participation.</li> <li>6. Women and development.</li> </ol> <p><b>Applications/Practical:</b></p> <ol style="list-style-type: none"> <li>1. Visit a municipality/village to meet with local leaders. Interview one leader to find out her/his perceptions of development -- what does development mean to him/her?</li> <li>2. Read the list of development indicators in the World Bank publication. Select 10 indicators that could be applicable to your community/municipality situation. Discuss why these are relevant to your context.</li> <li>3. Develop a list of development indicators for your home village/home municipality.</li> </ol>
<b>Block 4: Education- How Adults Learn and Change</b>	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. Formal, non-formal, and informal education: definitions and characteristics.</li> <li>2. Characteristics of adult learners and implications for teaching.</li> <li>3. Teaching-learning process and principles of teaching technical information to adults.</li> <li>4. Good practice tools for helping adults learn.</li> </ol> <p><b>Applications/Practical:</b></p> <ol style="list-style-type: none"> <li>1. Divide the class into three groups: group A, group B, and group C. Group A will discuss the characteristics of formal education, group B will be assigned non-formal education, and group C, informal education. Each group will discuss/ make a presentation on the characteristics and importance of formal, non-formal, and informal education in the large class.</li> <li>2. Interview at least 30 adults to find out how they prefer to learn about new technologies, processes, or practices. Present your findings in the class.</li> </ol>
<b>Block 5: Communication and Diffusion of Innovations</b>	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. Communication process, models and theories.</li> <li>2. ICTs and social media.</li> <li>3. Elements of diffusion.</li> <li>4. Innovation decision process.</li> <li>5. Adopter categories and communication channels by adopter categories.</li> <li>6. Attributes of innovation and their rate of adoption.</li> <li>7. Good practice tools for communication.</li> </ol>

**Applications/Practical:**

1. Visit an extension office to meet with an extension worker. Interview her/him to find out the desirable attributes of an innovation that enhance its rate of adoption. List the attributes.
2. Develop a Power Point presentation on a given topic to communicate with community leaders and development partners.
3. Prepare organizational charts (problem tree, flip, flow, organizational).
4. Practice field report writing and presentation.
5. Prepare a newsletter.
6. Write a script and presentation for a radio / TV program on select technology or new practice.

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## COURSE 2: MANAGING AGRICULTURAL EXTENSION PROGRAMS (2+1)

Blocks	Units
<p><b>Block 1: Working in the Community</b></p>	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. Understanding your community: people, culture, social structure, institutions, resources, local leadership, farming systems, etc.</li> <li>2. Role of the extension worker.</li> <li>3. Characteristics of effective extension workers.</li> <li>4. What process skills and competencies do extension workers need to succeed in the profession?</li> <li>5. Extension worker as community mobilizer and facilitator of community empowerment.</li> <li>6. Maslow's hierarchy of needs and its implication in community leadership.</li> </ol> <p><b>Applications/Practical:</b></p> <ol style="list-style-type: none"> <li>1. Visit a nearby village and write the village profile summarizing its people, culture, social structure, age, sex/gender and ethnic distribution, leadership, development challenges facing the village, and available resources.</li> <li>2. Visit a farm family to conduct an interview about extension services. Conduct separate interviews with male head of household and female head of household, ask about the desirable characteristics of extension workers. Compare the characteristics.</li> </ol>
<p><b>Block 2: Extension Teaching Methods</b></p>	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. Helping adults learn: principles of adult learning.</li> <li>2. Individual teaching methods.</li> <li>3. Group teaching methods.</li> <li>4. Mass media methods.</li> <li>5. Media mix strategies.</li> <li>6. Participatory methods.</li> <li>7. Use of ICTs and social media in extension.</li> </ol>

	<p><b>Applications/Practical:</b></p> <ol style="list-style-type: none"> <li>1. Preparation of printed materials (poster, booklet, leaflet).</li> <li>2. Preparation of charts (problem tree, flip, flow, organizational).</li> <li>3. Preparation and conducting drama (indigenous media).</li> <li>4. Preparation of newsletter and/or extension bulletin.</li> <li>5. Organizing agriculture campaign.</li> <li>6. Script writing and presentation for radio/TV program.</li> <li>7. Preparation and presentation skill development through Microsoft Power Point.</li> <li>8. Developing audiotapes and videos.</li> <li>9. Visit a nearby village and conduct participatory rural appraisal (PRA), prepare PRA diagrams and presentation – group activity.</li> </ol>
<p><b>Block 3: Extension Program Planning</b></p>	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. Program planning: definition and types of programs; steps in program planning.</li> <li>2. Conducting needs assessment.</li> <li>3. Prioritizing needs and problems.</li> <li>4. Identifying lay leaders and stakeholders.</li> <li>5. Conflict management theory and skills.</li> <li>6. How to effectively communicate with team members and clients.</li> <li>7. Establish a planning team and engage team in program planning.</li> <li>8. Acquire and allocate resources.</li> <li>9. Conduct the nominal group technique, community forums, brainstorming exercises.</li> <li>10. Identify market opportunities for farm products.</li> <li>11. Linking farmers to markets through groups and associations.</li> <li>12. Design services based on gender analysis.</li> <li>13. Developing an annual work plan.</li> <li>14. Develop a grant proposal: essential steps.</li> </ol> <p><b>Applications/Practical:</b></p> <ol style="list-style-type: none"> <li>1. Class discussions on various types of needs: felt and unmet needs, ascribed needs, etc.</li> <li>2. Review and critique of a community survey questionnaire.</li> <li>3. Design a community needs assessment survey (interview schedule).</li> <li>4. Develop a focus group discussion protocol with sample questions.</li> <li>5. Practice data collection using personal interviews schedule or focus group questions.</li> <li>6. Complete data entry and data analysis using statistical software.</li> <li>7. Prioritize community needs on the basis of survey results.</li> <li>8. Develop an educational program based on priority needs.</li> </ol>
<p><b>Block 4: Extension Program Implementation</b></p>	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. Implementing extension program: specify program activities, assign responsibilities, allocate budget/resources, ensure timely communication among staff members, manage conflicts, promote teamwork, conduct periodic meetings to check on progress, monitor the program activities, keep records, etc.</li> <li>2. Understanding group dynamics and facilitation of groups development.</li> <li>3. Managing groups and working as a team.</li> <li>4. Working with local leaders and development partners.</li> <li>5. Recognizing and rewarding employees.</li> <li>6. Creating a safe working environment.</li> <li>7. Coordinating with stakeholders for acquiring and mobilizing resources.</li> <li>8. Employing good practices tools in program implementation.</li> </ol>

	<p><b>Applications / Practical:</b></p> <ol style="list-style-type: none"> <li>1. Conduct farm and home visits.</li> <li>2. Conduct method and result demonstrations.</li> <li>3. Organize farmer field schools.</li> <li>4. Organize farmers' field days.</li> <li>5. Conduct meetings effectively.</li> <li>6. Manage conflicts (role play).</li> <li>7. Conduct a stakeholders' meeting at the community level.</li> <li>8. Manage time (role play/drama).</li> <li>9. Write field reports, write for newspapers and/or mass media.</li> <li>10. Observe extension planning meeting/workshop, research-extension linkages meeting at KVK/training center/regional office.</li> </ol>
<p><b>Block 5: Extension Program Evaluation</b></p>	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. Introduction to program evaluation: what and why.</li> <li>2. Common evaluation approaches and types.</li> <li>3. Ethics of evaluation.</li> <li>4. Program evaluation frameworks and designs.</li> <li>5. Evaluability assessment.</li> <li>6. Approaches to evaluation data collection.</li> <li>7. Selecting data collection techniques.</li> <li>8. Developing data collection instruments.</li> <li>9. Sampling for program evaluation.</li> <li>10. Collecting and analyzing evaluation data.</li> <li>11. Communicating evaluation findings with stakeholders.</li> <li>12. Using evaluation results for accountability and continuous program planning.</li> </ol> <p><b>Applications/Practical:</b></p> <ol style="list-style-type: none"> <li>1. Develop an evaluation plan.</li> <li>2. Practice developing data collection instruments. <ul style="list-style-type: none"> <li>- Surveys and interview schedules.</li> <li>- Semi-structured interviews for key informants.</li> <li>- Participant observation checklists.</li> <li>- Questions for an in-depth case study.</li> <li>- Protocol and questions for focus group discussion.</li> </ul> </li> <li>3. Develop data collection sheets for benefit/cost analysis.</li> <li>4. Design a sampling plan for a survey project.</li> <li>5. Choose a project, evaluate, and write the report.</li> </ol>
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### COURSE 3: AGRIBUSINESS AND SUPPLY CHAIN MANAGEMENT (2+1)

Blocks	Units
<p><b>Block 1:</b> <b>Agribusiness and Entrepreneurship Development</b></p>	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. Basics of agribusiness management and entrepreneurship development.</li> <li>2. Basic business management knowledge: business/agribusiness, resources in agribusiness.</li> <li>3. Entrepreneurship in small and medium enterprises (SMEs) and their role in development.</li> <li>4. Developing a winning business idea: idea generation, idea assessment, gross margin analysis, break-even analysis, value chain analysis, idea selections, idea development.</li> <li>5. Cooperatives: meaning of cooperation, types of cooperatives, principles of cooperatives, cooperative philosophy, cooperative business principles, cooperative management and structure, formation and registration of cooperatives, fundamentals of cooperative development.</li> <li>6. Smallholder farmer associations (SFAs): management structures, roles and responsibilities, individual members' roles, roles of clubs, roles of the board, the manager and his committee, the government.</li> <li>7. Bookkeeping for associations/cooperatives: introduction to accounting, users of accounting information, accounting equation, accounting cycle, original documents, books of original entry, ledger, trial balance, financial statements, profit and loss statement, balance sheet, accounting concepts, double-entry system of accounts.</li> <li>8. Gender integration in management of associations and cooperatives: gender terminologies, social construction of gender, gender analysis in SFGA and cooperatives, recommendations to improve women's participation in business management functions and managerial decisions.</li> <li>9. Preparation of financial statements in financing.</li> <li>10. Investment appraisals through use of discounted appraisal measures.</li> <li>11. Value chain analysis: concept, mapping, and approaches.</li> <li>12. Production planning in agribusiness -- planning production, risk management.</li> <li>13. World Trade Organization (WTO) and its implications and opportunities on international trade in the agricultural sector.</li> <li>14. Agricultural policies and their impact on agribusiness enterprises.</li> </ol>

	<p><b>Applications / Practical:</b></p> <ol style="list-style-type: none"> <li>1. Field visit to successful agricultural entrepreneurs – agripreneur start-up, farmer producer organization, SHG business, large business --to acquaint students with various types of agricultural entrepreneurship to assess the demand-supply of agricultural commodities.</li> <li>2. Conduct an analysis of backward and forward linkages of major agricultural product(s).</li> <li>3. Preparing and analyzing a balance sheet.</li> <li>4. Preparation and analysis of profit-and-loss statement.</li> <li>5. Cash flow analysis of an agro-industry or a cooperative.</li> </ol>
<p><b>Block 2: Farm Management</b></p>	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. Concept and scope of farm management.</li> <li>2. Management of farm resources -- land, labor, capital (machinery/equipment, and civil works/buildings) and organization.</li> <li>3. Principles of farm management decisions -- variable proportion, factor substitution, cost principle, opportunity cost principle, time comparison, and comparative advantage principle.</li> <li>4. Farm planning--characteristics and techniques.</li> <li>5. Farm budgeting -- enterprise partial budgeting and complete budget.</li> <li>6. Farm inventory, depreciation and valuation techniques for farm assets.</li> <li>7. Farm record keeping -- balance sheet, income statement, and cash flow statement.</li> <li>8. Farm efficiency measures.</li> <li>9. Risk and uncertainty--concepts, types, and safeguard measures.</li> </ol> <p><b>Applications/Practical:</b></p> <ol style="list-style-type: none"> <li>1. Farm record keeping -- develop record-keeping sheet for a farm commodity.</li> <li>2. Preparation of farm inventory.</li> <li>3. Development of new farm plan.</li> <li>4. Preparation of balance sheet of a farm.</li> <li>5. Preparation of income statement of a farm.</li> <li>6. Development of cash flow budget of a farm.</li> <li>7. Computation of depreciation of farm assets.</li> <li>8. Exercise on time value of money.</li> <li>9. Exercise on partial budget analysis.</li> </ol>
<p><b>Block 3: Supply Chain Management</b></p>	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. Concept of supply chain and value chain management.</li> <li>2. Customer service management.</li> <li>3. Supplier relationship management.</li> <li>4. Supply chain mapping of major agricultural commodities (rice, wheat, lentils, fish, milk, rubber, tea, coffee).</li> <li>5. Actors and regulators in the supply chain.</li> <li>6. Role of extension in developing and maintaining supply chain.</li> <li>7. Supply chain performance analysis and evaluation.</li> <li>8. Factors augmenting and hindering supply chain management.</li> </ol>

**Applications / Practical:**

1. Visit an agribusiness unit -- analyze problems, performance, and prospects (a case study). A group exercise. Let each group visit one unit and present the findings at the end.
2. Value chain mapping of major agricultural subsectors.
3. Preparation of business plan for agricultural firms.
4. Determination of optimum input use and maximization of profit using one input.
5. Determination of least-cost combination of inputs.
6. Revenue maximization through optimum enterprise combination.

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**Strengthening Agricultural Extension Training in South Asia (India, Sri Lanka and Nepal)**  
*Process Skills and Competency Gaps in Undergraduate Agricultural Extension Curriculum*

Dear Sir / Madam,

Greetings! As part of the Fulbright program, we are conducting a research on 'Strengthening Agricultural Extension Training in South Asia' (India, Sri Lanka and Nepal). The core objective of this work is to identify "Process Skills and Competency Gaps in Undergraduate Agricultural Extension Curriculum." You are invited to participate in this study because you are very well familiar with what skills and competencies are required for effective extension work.

Process skills and Core Competencies are basic sets of knowledge, skills, abilities, and behaviors that agricultural extension professionals require to perform their tasks well. Please keep this definition in mind while you answer the survey questions.

The findings will be shared with all important stakeholders of undergraduate extension curriculum including ICAR's next Dean's Committee & Veterinary Council of India for curricular revitalization.

Please know that your participation in this study is completely voluntary and the information you provide will be treated with strict confidentiality and will only be used for research purposes. You can withdraw at any time or refuse to answer any questions.

We request all Department Heads to share the survey link with your extension faculty, PG and PhD students of extension: [https://msu.co1.qualtrics.com/jfe/form/SV\\_9uGlo4IzPwNZfSt](https://msu.co1.qualtrics.com/jfe/form/SV_9uGlo4IzPwNZfSt)

It will take approximately 10 to 15 minutes to complete this survey. We recommend that you take this survey on a Desktop or Laptop computer.

If you have any questions regarding the study, please do not hesitate to contact us. As a token of appreciation, all respondents will receive a soft copy of the research report.

Thank you in advance for your cooperation.

Sincerely,

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&

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## Strengthening Agricultural Extension Training in South Asia (India, Sri Lanka and Nepal)

### Process Skills and Competency Gaps in Undergraduate Agricultural Extension Curriculum

1. What is your current position? (Check one)
  - Extension Faculty: Agriculture / Veterinary/Home Science / Fisheries
  - Extension Researcher: Agriculture / Veterinary Home Science / Fisheries
  - Extension Subject Matter Specialist in KVK
  - State Department Extension Functionary
  - Private Sector Extension Functionary
  - NGO Extension Functionary
  - Employer of Agriculture Graduates
  - Extension PG student
  - Extension PhD student

Please rate the importance and the level of competency on each statement on a 1 to 5 scale as explained below:

<p style="text-align: center;"><b><u>How important is this skill or competency?</u></b></p> <p>1 = Not important                  2 = Somewhat important                  3 = Average                  4 = Important                  5 = Essential</p>	<p style="text-align: center;"><b><u>How well does our UG extension curriculum address this competency?</u></b></p> <p>1 = Not at All Covered                  2 = Minimally Covered                  3 = Moderately Well Covered                  4 = Very Well Covered                  5 = Extremely Well Covered</p>
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#### A. Program Planning Skills and Competencies:

<b>Job skills and competencies:</b>		A01					A02				
		How important is this skill or competency to perform agricultural extension work/job?					How well does our current UG extension curriculum address this skill or competency?				
Extension professionals should be:		1	2	3	4	5	1	2	3	4	5
1	Familiar with the vision, mission and goals of extension service.										
2	Knowledgeable about national agricultural development strategies, programs, and policies.										
3	Able to engage stakeholders to conduct needs assessment										
4	Able to engage stakeholders to prioritize local needs.										

Job skills and competencies: Extension professionals should be:		A01					A02						
		How important is this skill or competency to perform agricultural extension work/job?					How well does our current UG extension curriculum address this skill or competency?						
		1	2	3	4	5	1	2	3	4	5		
5	Able to acquire resources to address priority needs.												
6	Able to engage local development partners such as NGOs, women groups, and cooperatives in extension program.												
7	Familiar with government administrative and financial rules and regulations.												

**B. Program Implementation Skills and Competencies:**

Job skills and competencies: Extension professionals should:		B01					B02						
		How important is this skill or competency to perform your extension work/job?					How well does our current curriculum address this skill or competency?						
		1	2	3	4	5	1	2	3	4	5		
1	Coordinate extension programs and activities within district and sub-district level.												
2	Demonstrate teamwork skills to achieve extension results.												
3	Engage local stakeholders in implementing extension program activities.												
4	Demonstrate negotiation skills to reach consensus and resolve conflicts.												
5	Follow participatory decision-making model in extension work.												
6	Delegate responsibilities to staff as needed.												
7	Be able to engage women farmers and members of minority groups in extension works.												

**C. Communication Skills and Competencies:**

Job skills and competencies: Extension professionals should be able to:		C01					C02				
		How important is this skill or competency to perform your extension work/job?					How well does our current curriculum address this skill or competency?				
		1	2	3	4	5	1	2	3	4	5
1	Establish communication with stakeholders										
2	Respect local culture while communicating with clients.										
3	Prepare monthly, quarterly, and annual progress reports of their extension work.										
4	Share success stories and lessons-learned with stakeholders through various media.										
5	Use various communication channels to disseminate information about important extension activities and programs (e.g., farmers' field day, disease and pest epidemics).										
6	Possess good listening skills and listen to all clients and stakeholders.										
7	Demonstrate good public speaking skills.										

**D. Information & Communication Technologies (ICTs) Skills and Competencies:**

Job skills and competencies: Extension professionals should be able to use:		D01					D02				
		How important is this skill or competency to perform your extension work/job?					How well does our current curriculum address this skill or competency?				
		1	2	3	4	5	1	2	3	4	5
1	Microsoft Excel for data entry and data analysis.										
2	Microsoft Word for word processing (e.g., typing, editing, printing) and designing graphics.										
3	Microsoft PowerPoint for making presentations.										
4	Audio-visual aids such as charts, graphs, and puppet shows for teaching and learning.										

5	Mass media like FM radio stations and television channels for communication.										
6	Computers (email, Internet, and webpages) for communication.										
7	Mobile phone services (e.g., texting, SMS service) for communication.										

**E. Program Evaluation Skills and Competencies:**

Job skills and competencies:  Extension professionals should be able to:		E01					E02				
		How important is this skill or competency to perform your extension work/job?					How well does our current curriculum address this skill or competency?				
		1	2	3	4	5	1	2	3	4	5
1	Understand theories and principles of monitoring and evaluation.										
2	Conduct monitoring and evaluation of extension programs.										
3	Develop data collection instruments for monitoring and evaluation of extension works.										
4	Apply qualitative tools and techniques (e.g., focus group discussion, in-depth interview, etc.) to collect evaluation data.										
5	Apply quantitative tools and techniques (e.g., survey, interview, farm data) to collect evaluation data.										
6	Analyze data (qualitative and quantitative), interpret data, and write evaluation report.										
7	Share evaluation reports within their organizations and with stakeholders.										

**F. Personal and Professional Development Skills and Competencies:**

Job skills and competencies:  Extension professionals should:		F01					F02				
		How important is this skill or competency to perform your extension work/job?					How well does our current curriculum address this skill or competency?				
		1	2	3	4	5	1	2	3	4	5
1	Practice principles of good governance (i.e., participation of clients, accountability to clients, transparency).										

Job skills and competencies: Extension professionals should:		F01					F02						
		How important is this skill competency to perform your extension work/job?					How well does our current curriculum address this skill or competency?						
		1	2	3	4	5	1	2	3	4	5		
2	Show commitment to career advancement (participate in lifelong learning, in-service training programs, professional meeting and conferences).												
3	Apply professional ethics in works, i.e. promote research-based recommendation or technology, honesty and integrity.												
4	Follow organizational policies and directives for in-service training and professional development.												
5	Demonstrate positive attitude towards extension work.												

#### G. Diversity and Gender Skills and Competencies:

Job skills and competencies: Extension professionals should:		G01					G02						
		How important is this skill or competency to perform your extension work/job?					How well does our current curriculum address this skill or competency?						
		1	2	3	4	5	1	2	3	4	5		
1	Understand that diversity exists within and among clients and stakeholders.												
2	Identify the needs of women, small farmers and minority groups.												
3	Develop extension programs to benefit women farmers.												
4	Engage various social and marginalized groups in extension programs.												
5	Do teamwork with diverse staffs at district and sub-district levels.												

#### H. Technical Subject Matter Expertise/Skills and Competencies

Job skills and competencies: Extension professionals should:		H01					H02						
		How important is this skill or competency to perform your extension work/job?					How well does our current curriculum address this skill or competency?						
		1	2	3	4	5	1	2	3	4	5		
1	Demonstrate that they have basic knowledge in their discipline (e.g., field crops, horticultural crops, livestock, IPM, fishery, etc.).												

Job skills and competencies: Extension professionals should:		H01					H02						
		How important is this skill or competency to perform your extension work/job?					How well does our current curriculum address this skill or competency?						
		1	2	3	4	5	1	2	3	4	5		
2	Understand the new technology being promoted, i.e., what it is, why and how it works.												
3	Be able to educate community members about different types of risks and uncertainties (due to climate change, market fluctuations, natural disasters, etc.).												
4	Refer to and make use of publications--journals, research reports, etc.												
5	Demonstrate basic knowledge of agribusiness management.												
6	Facilitate entrepreneurship development among extension clientele.												

**Additional Information about Competencies:**

I. If you feel there are additional job skills and competencies that extension professionals need, but are not listed above, please write them in the spaces below:

- 1.
- 2.
- 3.
- 4.

J. What are the appropriate ways to acquire the above-mentioned core competencies? Please rate each way or mechanism on a scale given below:

	Ways to acquire core competencies:	Not appropriate	Somewhat appropriate	Appropriate	Very appropriate
1	Through <b>Preservice Training</b> by revising or updating the UG, PG or PhD curriculums.				
2	Requiring <b>Internship</b> at various work environments (i.e., Public Institutions, NGOs, Private Companies, etc.) during UG, PG, or PhD programs.				
3	Through <b>Basic Induction Training</b> (e.g., job orientation training at the beginning of job)				
4	Through <b>Inservice Training</b> (e.g., training offered during the employment at SAUs and ICAR Institutes/Centers, etc.)				

5	Providing opportunities to attend <b>trainings, seminars, workshops, webinars</b> , etc.				
6	Other (please specify _____)				

**K. What are the major barriers to effective implementation of extension curriculum? Please check all that apply:**

- Quality faculty to teach extension courses
- Quality textbooks and/or manuals
- Classroom and demonstration facilities
- Budget to support practical learning experience
- Student motivation in practical extension work
- Teacher motivation to teach required process skills and competencies
- Other (please specify): -----

**L. What is your job title? Please specify \_\_\_\_\_)**

**M. How long have you served in extension profession? Write total number of years you have worked in extension. \_\_\_\_\_**

**N. How long have you worked in your current position? Write number of years. \_\_\_\_\_**

**O. Who is your primary employer? Select (P) one that applies.**

\_\_\_ State Agricultural/Veterinary University (SAU/SVU)

\_\_\_ Indian Council of Agriculture Research (ICAR)

\_\_\_ Ministry of Agriculture/Department of Agriculture / Animal Husbandry / Fisheries

\_\_\_ Non-Governmental Organization (NGO)

\_\_\_ Private Company

\_\_\_ Other (please specify \_\_\_\_\_)

**P. What is your highest level of education? Select (P) one that applies.**

\_\_\_ Bachelor's degree

\_\_\_ Master's degree

\_\_\_ Ph.D.

\_\_\_ Other (please specify \_\_\_\_\_)

**Q. What is your age now (in years)? \_\_\_\_\_**

**R. What is your gender?**

\_\_\_ Female

\_\_\_ Male

**S. If you would like to receive a copy of the research report, please provide your e-mail :**

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**Thank you for taking the time to complete this survey!**

## **Strengthening Agricultural Extension Training in South Asia (India, Sri Lanka and Nepal)** ***Process Skills and Competency Gaps in Undergraduate Agricultural Extension Curriculum***

### **Focus Group Sessions in India and Sri Lanka (2019-2020)**

Good (Morning/Afternoon) and welcome. My name is Murari Suvedi, and I am a professor at Michigan State University & Fulbright South Asia Regional Research Scholar. Assisting me is P.V.K. Sasidhar, Professor at Indira Gandhi National Open University (IGNOU). We have asked you to join us today so that we can listen to you, our colleagues and friends of Agricultural Extension Services. More specifically, we are interested in your thoughts and opinions regarding Agricultural Extension and how extension services could address the evolving needs of our farmers, agribusinesses, and development partners.

The objectives of this focus group are to gather information, including perceptions and ideas, from you about:

- i. How effective are our extension programs in addressing the needs of our food and agricultural systems?
- ii. What are the critical job skills and core competencies required of extension workers to effectively plan, implement and evaluate extension work in the changing context?
- iii. Does our undergraduate (UG) curriculum in extension education include education and/or training on these job skills or core competencies?
- iv. What are the barriers to effectively train extension workers with required core competencies and how can these barriers be removed?

Your responses will be used to supplement the results of a broader, nation-wide survey on 'Strengthening Agricultural Extension Training in South Asia' (India, Sri Lanka and Nepal). The results of focus group discussions and the nation-wide online survey will be used to recommend subsequent development of competency-based curriculum for extension professionals across the region. Therefore, it is very important that you respond as openly and thoughtfully as you can.

This session may be audio-taped to ensure accuracy in our written summaries. We will do everything in our ability to ensure the confidentiality of your responses; no transcribed comments will be attributed to any individual. To make sure we capture all the comments, we ask that you speak one at a time. Focus groups are most successful when participants share the time among themselves, but don't feel like you have to respond to every question. If any question is ambiguous or confusing in any way, please ask for clarification.

The session may last about 90 minutes, and we will not take a formal break. If, at any time, you wish to get up for coffee or a snack, please feel free to do so.

Do you have any questions before we begin?

Let us begin by finding out a little more about each other. As we go around the room, please introduce yourselves and tell us a bit about your involvement in extension and agriculture related business or industry.

1. What are you hearing among your constituents and/or from people in the agricultural community about agricultural extension, in general?  
-----
2. What has been your own experience with respect to agricultural extension? Are you involved in developing extension curriculum, teaching extension courses, hiring extension workers, supervising extension workers, or developing extension programs or policies?  
-----
3. How effective are our extension programs in addressing the needs of the changing agricultural systems? What is one thing that extension service is doing particularly well in your State or region in agriculture arena?  
-----
4. If you could come up with one major recommendation to improve agricultural extension services and program delivery, what would it be?  
-----
5. What are the critical job skills or core competencies required of agricultural extension workers in the changing agricultural and rural development context?  
-----
6. Does our undergraduate (UG) extension curriculum effectively train students on the above job skills core competencies?  
-----
7. What are the barriers to effectively train UG students with required core competencies and how can these barriers be removed?  
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8. What changes or modifications might you recommend with respect to agricultural extension curriculum? Are there courses we are not teaching that we should consider including in extension curriculum? What courses or contents are outdated that we should consider dropping out?  
-----
9. Finally, we have invited you here because we value your input and responses to our questions, but we would like to know who else we should be asking? Do you have suggestions for others we should be including as we continue to seek inputs and advice? Who are they? What should we be asking them?  
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10. Are there any final comments?  
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Please write your e-mail in Capital Letters (To receive soft copy of the final report):  
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Our time has passed quickly. On behalf of Fulbright Program, MSU and IGNOU, I want to thank you for taking time from your busy schedules to share with us this important information. Your comments and suggestions will help us develop recommendations for 'Strengthening Agricultural Extension Training in South Asia'.

Thank you for your participation!